R·I·T

1988-89

Program and Course
Description Guide

College of Continuing Education

Who to Call About What in the College of Continuing Education

GENERAL INFORMATION 475-2234

Administrative Officers and Staff

Dr. Donald D. Baker, Dean 475-5070
Dr. Lawrence W. Belle, Associate Dean 475-5872

Academic Division

Dr. Lawrence W. Belle, Associate Dean 475-5872

Admissions & Student Services

Christine Hammer, Associate Director 475-5807
Joyce Clayton, Coordinator Student Services 475-5511
Bobette Frizelle, Coordinator of Academic Services 475-6594
Bette Anne Winston, Academic Advising Coordinator 475-2218

Business & The Arts Division

Daniel Smialek, Acting Director 475-4999
Eric Bellmann, Chairperson, Fine & Applied Arts & Crafts 475-4977
Betty Conley, Chairperson, Communications 475-4936
Dr. Ronald Hilton, Chairperson, Liberal Arts 475-4986

Science & Technology Division
School of Applied Industrial Studies

Henry Cooke, Director 475-5021
Alfred Haacke, Chairperson, Physics and Computer Systems 475-4934
Elizabeth Paciorek, Chairperson, Drafting Technology 475-4994
Ronald Perry, Chairperson, Computer Service Technology 475-5001

Center for Quality and Applied Statistics

Dr. John D. Hromi, Director 475-2002
Dr. Edward Schilling, Chairperson, Graduate Statistics 475-6129

Department of Career and Human Resource Development

Dr. Dorothy Paynter, Director 475-5069

Information Services

Alice McCrave, Manager 475-2531

College of Continuing Education

A traditional college education is not always the answer. For the adult student—juggling work, family and social obligations—alternative ways to reach educational goals are a necessity.

The courses and programs offered by the College of Continuing Education (CCE) are tailored to the adult student who has been working for several years and is reaching for the next rung on the career ladder, is contemplating a career switch, or is re-entering the work force after some years away. Students can earn certificates, diplomas, and degrees.

The courses and programs are offered during the day, at night, on Saturdays, through Weekend College, and even via TeleCourses that students can take at home.

The CCE **Academic Division** offers numerous options in areas such as management, photography, technologies, and machine tool, as well as fine and applied arts, technical communication, business administration, computer science and general education. CCE offers 19 certificate programs and diplomas, 23 associate degrees, and six bachelor of science degrees, as well as the new flexible Applied Arts and Science Degrees at the diploma, associate and baccalaureate levels.

The School of Applied Industrial Studies (SAIS) offers day and evening Machine Tool Technical Certificate programs, as well as an evening Computer-Aided Drafting Certificate program.

The **Center for Quality and Applied Statistics** (CQAS) offers a master of science degree in applied and mathematical statistics for part-time or full-time students. Summer study and co-op programs also are available. The center presents short courses and seminars through its "Quality and Productivity Series" for individuals, business and industry. Call 475-6129 for additional information.

The **Career and Human Resource Development Department** (CHRD) provides graduate study leading to a master of science degree in career planning and human resource development. The behavioral science-based program emphasizes the areas of organizational development, career development, human resource development and statistical analysis. The program is open to both full- and part-time students and prepares professionals for employment in education, business, industry, and social services agencies. Call 475-5069 for additional information.

RIT Training and Professional Development offers several hundred short courses, seminars and workshops "each year, presented by RIT faculty, and nationally renowned speakers. These programs won't provide participants with credit, but will provide them with up-to-date knowledge and skills in a wide range of fields—business, communications, engineering, allied health, human resource development, small business skills—the list goes on.

RIT Training and Professional Development offers custom-tailored programs for business, industry and organizations. Staff experts will help with a firm's in-house training needs, analyze, and design training programs that meet those needs exacdy. Call 475-6600 for additional information.

The CCE **Open Enrollment Policy** allows a student to take any course or pursue any degree for which he or she has sufficient background. Academic advisors are available throughout the year to answer questions regarding course or program choices.

To officially choose a program, students must matriculate—that is, complete an admissions application and be accepted. At the time of matriculation degree requirements are defined and documented, transfer credits are evaluated to meet degree requirements, and eligibility for applying for student loans and state and federal aid is established.

Specially trained financial aid counselors can provide students with information about some of the grants and loans available for part-time students. In addition to federal, state and private programs, RIT has special financial aid funds for part-time students that can cut tuition costs by as much as 50 percent. Many companies have employee education benefits that will pay for some or all tuition costs; active U.S. Army Reserve and National Guard members are eligible for benefits that pay up to 90 percent of tuition.

For students who want to try a new field, brush up on some old skills, or are looking for personal satisfaction rather than credit, RIT's new Audit Policy may be the answer. Students can audit many of the CCE credit courses on a non-credit basis, and the tuition is half price.

For more information on any of the programs offered by CCE, call 475-2234.

What about transfer credit from other schools?
Degree programs in CCE are structured to permit transfer of credit from other accredited institutions. When a student matriculates into a specific program, a complete evaluation is made of prior academic work. The student will know immediately how much transfer credit is awarded and what courses will be needed 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.* Call 475-2218 for more information.

Who teaches our courses?
Most courses in the College of Continuing Education are conducted by instructors who teach what they do professionally. Our faculty are selected for their professional competence, academic background and teaching ability. Our 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.

When are courses taught?
In addition to our weekly evening and trick work schedules, we also offer courses on television and through audio conferences, and Weekend College.

Telecourses offer quality programming which students can take at home. Courses combine video-tape lectures aired on cable and public broadcast television with textbook readings, audio and computer conferencing, assignments, exams, and a limited number of class meetings. Students have access to instructors by mail, computer, telephone, or individual appointment. These electronic delivery systems allow students to learn at times and places convenient to them.

Weekend College courses meet on Saturdays, (leaving the rest of your weekend free) usually every other weekend, and a full course may be completed in four or five weekends. Weekend College students enjoy the schedule and the seminar-like environment. Through Weekend College, you can earn credits toward a degree or complete a certificate or diploma program.

Applied Arts and Science Degrees

Adult students returning to college on a part-time basis need high-quality degree programs in a variety of fields that are both flexible and recognize an adult's prior college level-learning. The College of Continuing Education now offers you the opportunity to tailor an **individualized program of technical and professional study** through its new Applied Arts and Science program. There are three levels:

Diploma
36 credits; 1 area of concentration

Associate of Applied Science (AAS) degree: 52 core credits plus 38 credits in 1-2 areas of concentration plus general education courses

Bachelor of Science (BS) degree: 90 core credits plus 90 credits in 2-4 areas of concentration plus general education courses

Individualized Concentrations
The associate and bachelor's degrees allow you to study several different professional and technical areas, selected specifically to meet your unique career and personal goals. The diploma focuses on one concentration. For your professional concentrations, you can draw on a wealth of educational resources from across RIT colleges and departments, including: **engineering technologies, sciences, computing, photography and printing, business and management, liberal arts, physical and social sciences, mathematics, fine arts, and applied communication.**

No two Applied Arts and Science programs will be exactly alike because each takes into account the student's previous learning and brings together a special combination of courses that are right for the individual student's career and professional development. For example, one individualized program might lead to a bachelor's degree with concentrations in computing, graphic arts, and management, while another could lead to a bachelor's degree that combines fields of communication and management.

And as your career plans evolve and the demands of your technical and professional fields change, you will meet regularly with your advisor to review and update your plan of study.

Common Features
Every Applied Arts and Science degree has certain features in common:

1. An approved program of study developed with an individual advisor and advisory committee
2. General education courses in mathematics, computer science, science, and liberal arts (52 credits for the AAS; 90 credits for the BS)
3. One or more professional concentrations which provide each student with the opportunity to develop an interdisciplinary program tailored to specific career and personal objectives:

Recognition for Prior College-Level Learning
Your program will begin by taking account of what you already know and have accomplished. For example, college credits earned at RIT or other institutions will be reviewed to see how they might be applied to your Applied Arts and Science program of study; your professional certifications and experiences will be evaluated for the possibility of receiving credit in your new program; and you may earn credits (by examination, portfolio reviews, or other documentation) for college-level learning that you have gained on-the-job or through other educational experiences. For advising, contact Bette Anne Winston at 475-2218.

Course requirements, CIDA-AAS & CIDB-BS degrees

	Math/ Computer/Science	Qtr. Cr.	Liberal Arts	Qtr. Cr.	Concentration(s)* 1 or 2	Qtr Cr.
Phase 1 +2 CIDA-AAS	Tech Math CTAM-201,202 or College Math for Business CBCH-201,202 or Math Thought/ Process AND CTAM-205 Modern Math Methods CTAM-206 Intro to Computers/ Prog. CTDS-200 or Intro to Computer Science CTDS-202 or Data Processing CBCC-321 College Physics/ Lab CTCP-221, 222,223,206 207,208 or Contemporary Science (3 of 4 courses) CTCS-221,222, 223,224 or Engineering Chemistry/ Lab CTCC-241, 242,243,246 247,248	8 8 4 4 4 4 12 12 12	Communications + + CHGL-220 Literature CHGH-260 Communications Elective Humanities Electives Behavioral Science Electives	4 4 4 8 8	To be developed by student with advisor	38
Phase3 + 4 CIDB-BS	**Math/Science** Math OR Science Electives"*	8	**Liberal Arts** Humanities Elective" Liberal Arts Concentration"" Liberal Arts Electives"" Senior Seminar	4 12 16 2	**Concentratiori(s)* 2 or 3** To be developed by student with advisor	52

+ + These communications courses require pretest; call 475-2234 for information. Students completing BS orB. Tech degrees must also pass a communications competency test.
'A concentration = 20 QH (or more) in one subject area (i.e., Computers, Communications, Business).
"Must choose one course each from three different areas of Humanities (i.e., Fine Arts, History, Philosophy, or Science/Technology and Values).
**"Cannot be in the same area as professional concentration.*
*""Students choosing a Liberal Arts area for a professional concentration must choose their "Liberal Arts Concentration" and "Liberal Arts Electives" in **other** disciplinary or interdisciplinary areas in the College of Liberal Arts.*

Business and The Arts

Nancy Kunkler, Academic Program Assistant

The Business and The Arts Division of CCE provides a wide variety of technical and professional programs of study at several distinct levels of achievement. In addition, many general education courses, which are a required part of every degree program in CCE, are offered by this division.

Each program of study is carefully designed to meet the interests of students and Rochester's expanding business, artistic and industrial complex. Advisory commitees composed of representatives from local business, industries and professional groups contribute to an ongoing assessment of courses and programs of study to assure high-quality education. Business and The Arts includes the following:

- Individual courses and sequences of special interest
- Small Business Management Certificate
- Customer and Consumer Service Certificate
- Management Certificate
- Certificates in Basic and Advanced Technical Communication
- Business and Career Communication Certificate
- Certificates in Public Relations Communications—Programs in Professional Writing and Graphic Communication
- Management Diploma (7 options)
- AAS in accounting, business administration, marketing, personnel administration, production management, and traffic and transportation
- AA in general education (with career options)
- Deaf studies concentration
- Diplomas in fine and applied arts and crafts
- Diplomas in printing and photography
- AAS in professional photography
- AAS/BS in graphic arts (with 3 options)
- AAS/BS in photographic science

Business and Management Studies

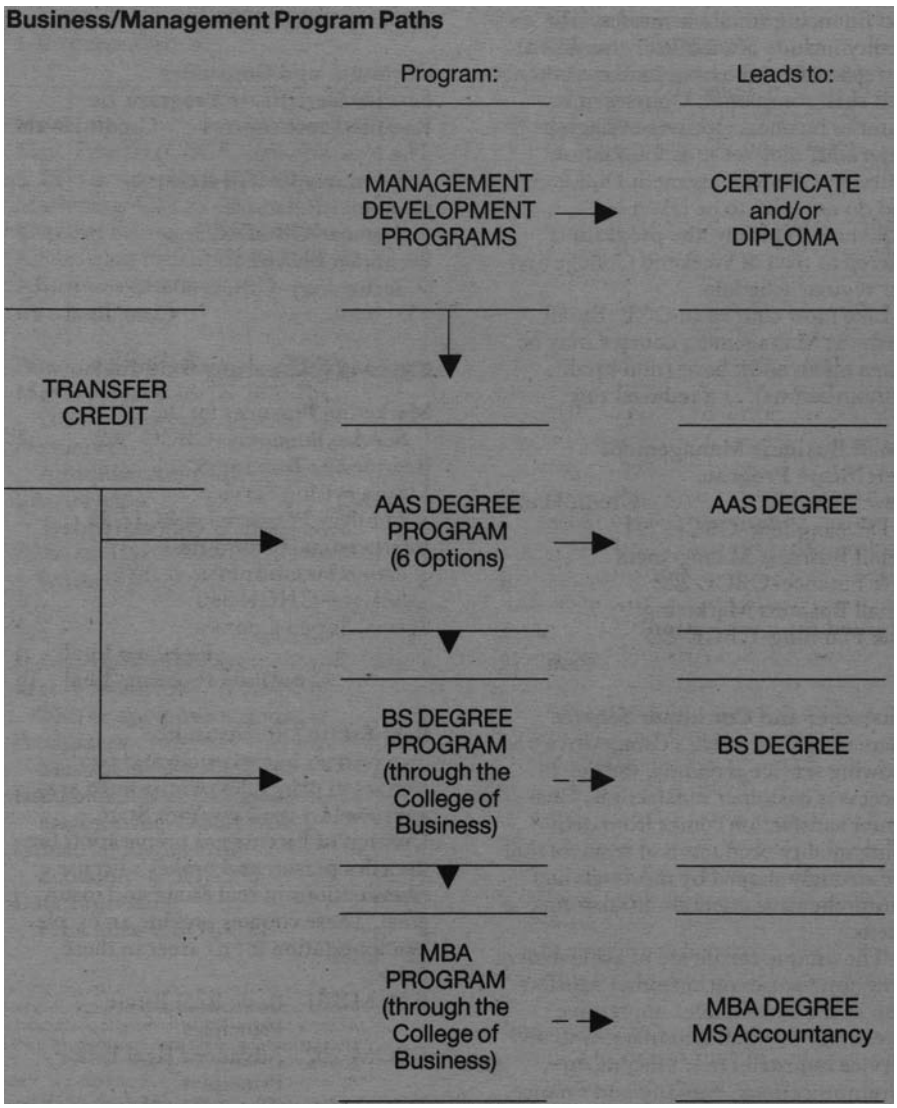
Approximately 50 credit-bearing courses in business and management subjects are available through the College of Continuing Education.

Courses leading to an AAS degree and transferable to appropriate baccalaureate degree programs in RIT's College of Business and other schools are available in business administration, accounting, marketing, personnel administration, production management, and traffic and transportation.

For those interested in a short-term concentration in one of these fields, CCE also offers a Management Development Program leading to a Management Certificate and Management Diploma, a Small Business Management program, and a program in Customer and Consumer Service. Courses also may be taken individually.

General requirements for an AAS degree, diploma, or certificate in business or management are:

- Completing the necessary quarter credits
- Following the program outline when selecting courses
- Achieving a program GPA of at least 2.0 in order to be certified



Small Business Management Development Program

The certificate of achievement program in Small Business Management is designed for enterprising individuals who want to launch a new venture or improve an existing small business. It is especially appropriate for entrepreneurs, key members of families owning businesses, and key employees in companies with sales under $2 million.

The three courses in the program are tightly integrated, to provide a solid foundation in managing, marketing, and financing small businesses. The faculty include academically qualified entrepreneurs who have managed their own shall companies. Courses may count as business electives in degree programs, may serve as foundation courses to the Management Diploma, and do not have to be taken in sequence. Typically, the program is offered as part of Weekend College and our regular schedule.

Like most courses in CCE, Small Business Management courses may be taken on an audit basis (non-credit, without exams), at a reduced rate.

Small Business Management Certificate Program

New Venture	Credit Hours
Development-CBCE-221	4
Small Business Management & Finance-CBCE-222	4
Small Business Marketing & Planning-CBCE-223	4
Total	12

Customer and Consumer Service

Increasingly, in today's competitive and growing service economy, the key to success is customer satisfaction. Customer satisfaction comes from delivering quality products and services that are strongly shaped by thorough and comprehensive attention to customer needs.

The unique certificate of achievement program focuses on customer satisfaction as the sustainable competitive advantage for both manufacturing and service industries (e.g., health care, communications, banking and finance, transportation, retailing). Special attention is paid to developing an orientation toward customer satisfaction throughout organizations, and to the relationship between customer satisfaction and customer service.

This program is designed for:

- managers and potential managers who want to implement customer satisfaction principles and practices throughout their organizations
- current and future managers, supervisors, and personnel in sales, customer service, consumer service, customer relations, quality management, and human resource management.

The program consists of 16 credits—10 in required core courses and an additional 6 selected from an array of specialized electives. The Certificate may be completed in one year of study. Individual courses and/or the Certificate may be applied to appropriate undergraduate degree programs. The program may also be acquired as a post-baccalaureate credential. For more details, call 475-4999.

Customer and Consumer Service Certificate Program

Required core courses	Credit Hours
The New Service Economy-CHGS-227	2
Customer Relations Systems-CBCE-305	4
Customer Service Technology-C BC E-306	4
Core Total	10

Electives (choose any 6 credits):

Marketing Practices for the Service Economy-CBCG-362	2
Recruiting, Training & Supervising Service Industry Personnel-CBCI-225	2
Interpersonal Communication for Customer Service-CHGL-340	4
Special Topics Courses	2-4
Electives Total	6
Certificate Program Total	16

Real Estate and Insurance

Two courses in real estate and two courses in principles of insurance are approved by the New York State Division of Licenses as preparation for the sales person and broker's license examinations in real estate and insurance. These courses provide an excellent foundation for a career in these fields:

CBCM-201	Basic Real Estate Principles
CBCM-202	Advanced Real Estate Principles
CBCN-271	Principles of Insurance I
CBCN-272	Principles of Insurance II

The Management Development Program

The Management Development Program has two components: The Management Certificate and The Management Diploma. By successfully completing the Management Process (CBCE-200, 201, 202), a 12-credit course in practical supervision, management, and communication skills, students may earn the Management Certificate. To receive a Management Diploma, students must complete 16 additional credits in one of seven business/management concentrations.

The program is structured to provide a broad foundation in applied general management, and focused study in a specialized field. It is specifically designed for new supervisors, emerging managers, and those seeking supervisory and management positions; and for new and re-entering students. Both parts of the program are also appropriate for individuals with degrees in the liberal arts, sciences, or technologies, who wish to acquire new professional skills and expand their career opportunities.

Students may take one or both parts of the program; and both may be completed in one academic year. Credits earned in The Management Development Program can be applied to various degree programs. Management Certificate and Diploma courses are typically offered as part of our Weekend College and our regular schedule. For further information, call 475-4999.

Management Certificate

The first component of The Management Development Program is The Management Certificate.

The Management Certificate is earned by successfully completing CCE's unique three-quarter, 12-credit course, The Management Process (CBCE-200, 201,202).

The Management Process focuses on:

- Practical applications of management theory
- Management problems, solutions and ideas
- Personal development as an effective manager

The Management Process offers a comprehensive, integrated study of supervisory management. Topics covered include effective motivation, decision making, team building, conflict resolution, problem solving, time and stress management, communication techniques and strategies, planning, organizing, staffing, performance appraisal, and leadership.

In this program students associate with others who have similar career aspirations, job responsibilities and challenging problems on the job. Through case studies, role-plays, simulations, and other instructional methods, students learn effective supervisory and management practices. Instruction is usually guided by a team of management specialists, rather than by a single instructor.

Credits earned in the Management Certificate program may also be applied toward appropriate degree programs.

Management Certificate Program

	Credit Hours
Management Process I–CBCE–200	4
Management Process II–CBCE–201	4
Management Process III–CBCE–202	4
Total	12

Management Diploma

The second component of The Management Development Program is The Management Diploma.

In the Management Diploma program, students concentrate their studies in one of seven specific areas of business and management (such as accounting or marketing) that may be immediately relevant on the job.

A Management Diploma is earned by completing 16 quarter credits in addition to, typically, a Management Certificate. However, three foundation courses (Organization and Management, CBCE-203; Communications, CHGL-204 or 205 or 220; and one additional business elective) *or* the Small Business Management certificate (New Ventures Development, CBCE-221; Small Business Management and Finance, CBCE-222; and Small Business Marketing and Planning, CBCE-223) *or the equivalent,* may be substituted for the Management Certificate.

Courses applied toward a Management Diploma may also be counted as professional courses in appropriate degree programs.

Management Diploma Programs

Accounting	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Financial Accounting-CBCA-201	4
Managerial Accounting-CBCA-203	4
Intermediate Accounting I-CBCA-308	4
Intermediate Accounting II-CBCA-309	4
Total	28

General Management	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Financial Accounting-CBCA-201	4
Managerial Accounting-CBCA-203	4
Data Processing Principles—CBCC-321	4
Marketing-C BCG-361 or 1-Business Elective	4
Total	28

Marketing	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Marketing-CBCG-361	4
Effective Selling-CBCG-210	4
Advertising Principles-CBCG-213	4
1-Business Elective	4
Total	28

Personnel Administration	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Personnel Administration-CBCI-229	4
Interviewing Techniques-C BC1-224	4
Business Law I-CBCB-301	4
1-Business Elective	4
Total	28

Industrial Management	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Production Management-C BCJ-209	4
Fundamentals of Industrial Engineering-CBCJ-305	4
Industrial Engineering Economy-CBCJ-306	4
Data Processing Principles-CBCC-321	4
Total	28

Traffic, Logistics and Purchasing	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Introduction to Logistics & Transportation-CBCL-234	4
Traffic & Transportation Law, Rates, Accounting & Control-CBCL-239	4
1-Transportation & Logistics Elective	4
Marketing-CBCG-361	4
Total	28

Real Estate Management	Credit Hours
Mgt. Process (CBCE-200, 201, 202) or approved alternative	12
Basic Real Estate Principles-C BCM-201	4
Advanced Real Estate Principles-CBCM-202	4
Real Estate Investment & Finance-CBCM-203	4
Real Estate Evaluation-CBCM-204 or 1-Business Elective	4
Total	28

Business and Management AAS Degree Programs

Programs leading to an AAS degree in business administration are available in:

- accounting
- business administration

Programs are fully transferable to baccalaureate degree programs in RIT's College of Business.

AAS degree programs in management are offered in:

- marketing ,
- personnel administration
- production management
- traffic & transportation

Management programs are designed to give specialized skills in these areas, with course work being transferable to a BS degree program in RIT's College of Business.

All business and management degree programs include a core group of business courses in organization and management, accounting, data processing and business law. Approximately half of the credits in degree programs are earned through these professional courses, which may count in Management Diploma programs, as well as in AAS degrees. In addition, all business and management degree programs include a broad spectrum of courses in communication, behavioral/social sciences, humanities, math and science.

Core Requirements, All Business and Management AAS Programs

Below are the core requirements for all business and management degree programs to which professional program requirements are added.

Required Courses 92 Credits	Financial Accounting .. CBCA-201	4	Communications* CHGL-220	8	Science Electives"		8
	Managerial Accounting . CBCA-203	4	Literature.®™. CHGH-260		Math for Business . CBCH-201,202		8
	Organization &Mgmt(1) . CBCE-203	4	or	or	Statistics. CBCH-351,352		8
	Data Proc. Principles . . CBCC-321	4	Dyn.Comm.I*. CHGL-204				
	Principles of Marketing . CBCG-361	4	Dyn. Comm II. CHGL-205	8			
	Management Science ... CBCE-353	4					
	Professional Concentration Courses (see below)	20	Economics. CHGS-221,222	8			
			Psychology. CHGS-211	4			
			Sociology. CHGS-231	4			
	Total	44	Total	24	Total		24

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

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

	Qtr. Cr.
Dynamic Communications I (CHGL-204).	*.4*
Organization & Management (CBCE-203).	*.4*
1-Business elective	*.4*

' These communications courses require pretest; call 475-2234 for information.
Students who take CHGL-204 should also take CHGL-205. Students who take CHGL-220 should also take CHGH-260.

Science electives may include any of the following:
Comtemporary Science/Biology CTCS-221
Contemporary Science/Chemistry CTCS-222
Contemporary Science/Physics CTCS-223
Contemporary Science/Oceanus CTCS-224
Engineering Chemistry CTCC-241,242,243 or
College Physics CTCP-201,202,203

Professional Concentration Requirements, Business and Management AAS Programs

In addition to the core requirements, students must also complete *one* of the following professional concentrations.

Accounting (CBCA)		**Cr. Hrs.**
Intermediate Accounting 1	CBCA-308	4
Intermediate Accounting II	CBCA-309	4
Business Law 1	CBCB-301	4
Business Law II	CBCB-302	4
History or Fine Arts Elective		4
		20

Business Administration (CBCE)		**Cr. Hrs.**
History or Fine Arts Elective		4
Legal Environment of Business	CBCB-310	4
3-Business Electives!		12
		20

Marketing (CBCG)		**Cr. Hrs.**
Effective Selling!	CBCG-210	4
Advertising Principles!	CBCG-213	4
Business Law 1	CBCB-301	4
2-Business Electives!		8
		20

Personnel Administration (CBCI)		**Cr. Hrs.**
Personnel Administration!	CBCI-229	4
Interviewing Techniques!	CBCI-224	4
Business Law 1	CBCB-301	4
2-Business Electives!		8
		20

Production Management (CBCJ)		**Cr. Hrs.**
Production Management!	CBCJ-209	4
Fundamentals of Industrial Engineering!	CBCJ-305	4
Industrial Engineering Economy!	CBCJ-306	4
Business Law I	CBCB-301	4
		4
		20

Traffic & Transportation (CBCM)		**Cr. Hrs.**
Introduction to Logistics & Transportation	CBCL-234	4
Traffic & Transportation Law Rates, Accounting & Control	CBCL-239	4
1 -Transportation & Logistics Elective		4
Business Law I	CBCB-301	4
		4
		20

'To transfer these courses to RIT's College of Business you will be required to complete subsequent courses in the same subject area.

†Acceptable as free elective transfer credit into baccalaureate degree programs in RIT's College of Business.

Professional courses may be counted in management diploma and AAS business/management programs.

The Arts/General Education

The arts side of Business and the Arts includes courses and programs in liberal arts and humanities, behavioral and social science and communication. These are often referred to as general education courses. In the Arts we also offer 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) and crafts (CHAC), as well as the associate in arts degree in general education (CHGE). Certificates in technical communication and a concentration in deaf studies also are available.

General Education
General education courses serve a pivotal function within all programs of the College of Continuing Education. These courses provide the foundation upon which professional knowledge is built. The faculty introduces the basic concepts and skills of the arts, humanities, communication, and the behavioral and social sciences.

Each professional and technical program within CCE selects from general education courses essential to developing professional and personal competence. Students are then given a range of free electives to fill out personal interests.

Writing Program and Exit Test
To insure that graduates of all CCE associate degree programs will be prepared to meet the writing demands of their careers. CCE instituted the following writing program in September 1984.

1. Diagnostic Test. All students planning to register for Dynamic Communications I (0236-204), or Communications 220 (0236-220) must take a 40-minute diagnostic placement test prior to registration. (Students may register for 205 without pretesting if they have credit for 204.) Results of the tests will allow us to place students in the most appropriate course for developing their written and other communication skills. Students may take the diagnostic test at their convenience in the CCE office (M-R, 8:30 a.m.-7:30 p.m. and F, 8:30 a.m.-3 p.m.) or during Open Registration (see quarterly schedule for testing times).

2. Exit Test. An exit test given prior to the last week of classes in 205 and 220 is part of the communications requirements for all associate degrees. Students who do not pass the test may work out a program with their instructors for mastering needed skills and may re-take the exit test at a later time. When the test has been passed, students will receive the grade they earned in the course.

General Education AA degree program

Ronald Hilton, Chairperson

The associate in arts (AA) is the only liberal arts degree program offered by the College of Continuing Education. Students 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, they will consider the relationship of these studies to 20th century technology and business.

After fulfilling the basic course requirements, students finish the degree by choosing one of two options: to deepen understanding of the liberal arts by adding courses in the humanities, communication, and social sciences; or to take advantage of RIT's extensive opportunities in career training by including 20 credits of study in a specific career skill. Areas of career study include:

Accounting
Advertising Design
Technical Communication
Communication
Public Relations Communications
Fine Arts
Personnel Management
General Management & Supervision
Industrial Management
Small Business Management
Real Estate
Marketing
Deaf Studies

For more information on the career skills option contact the Division of Business and the Arts at 475-5027.

Course requirements, General Education (CHGE), AA Degree

		Qtr. Cr.		Qtr. Cr.
Required Courses 92 Credits	Humanities . . CHGH-201,202,203	12	Economics CHGS-221	4
	Introduction to Literature CHGH-260	4	Psychology CHGS-211	4
	Introduction to Art Appreciation CHGH-210	4	Philosophy . CHGH-270	4
	Introduction to Music Appreciation CHGH-230	4	Electives*	20
	Modern Europe CHGH-323		Career Skills Area . .	20
	or	4		
	Modern America CHGH-325			
	Political Science CHGS-261	4		
	Contemporary Science Elective . .	4		
	Science, Technology & Humanity Elective	4		

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

Public Relations Communications Certificates

Ronald Hilton, Chairperson

Public relations communications are vital to virtually every human endeavor. Almost every organization employs individuals, either in house or by contract through public relations agencies, who can prepare press releases, brochures, newsletters, annual reports, point of purchase promotions, and other persuasive, informative materials in a variety of media. The demand for people trained in the special skills of public relations communications will continue to grow well into the 1990s.

Underlying successful public relations communications are skills in two key areas: writing and graphic communication. CCE now offers a certificate program in each of these specialities. Both programs share a common core of courses that provide an introduction to public relations and teach widely used principles and techniques of advertising, project management, and persuasion. The professional writing program provides specialized instruction in writing marketing materials, inbound and outbound publications, corporate-level communications, and speeches and scripts. The graphic communication program (designed specifically for non-artists) focuses on understanding the components of the advertising process, the use of effective design principles in the preparation of layouts, and the combining of creative and technical skills to achieve design success.

These programs are intended for individuals who wish to enter the field of public relations or take on PR responsibilities; or who have been working in a particular aspect of public relations and who wish to upgrade or broaden their skills; and/or who have been performing PR tasks for which they have had little formal preparation. Courses in these programs were developed with the assistance of Rochester-area public relations communicators and are taught by experienced professionals.

Up to four credits may be awarded by examination or for courses taken at another college. Prerequisite for the core courses is demonstration (by examination, portfolio, or transcript) of a command of standard written English.

Courses are scheduled so that the core and one or both of the certificate options may be completed in four quarters of part-time study. Students may earn one or both certificates, and students not wishing to take an entire certificate program may take specific individual courses. Courses may be applied toward appropriate diploma, AAS, and BS degree programs. Students must achieve a program GPA of at least 2.0 in order to be certified. For advising and further information about these courses, transfer credit, credit for college-level learning, and financial assistance, call Ronald Hilton, 475-4986.

Core Courses, Certificates in Public Relations Communication	Credit Hours
Introduction to Public Relations-CHGL-360	2
Psychology of Persuasion-CBGS-320	2
Advertising Evaluation & Techniques-CBCG-214	4
Managing the Project-CHGL-332	2
Core Total	10

Certificate in Public Relations Communications—Professional Writing	Credit Hours
Core Courses	10
Writing for the Organization I-CHGL-365	2
Writing for the Organization II-CHGL-366	2
Promotional Writing-CHGL-331	2
Scripting and Speechwriting-CHGL-367	4
Certificate Total	20

Certificate in Public Relations Communications—Graphic Communication	Credit Hours
Core Courses	10
Graphic Communication for the Non-Artist I-CHAD-270	3
Graphic Communication for the Non-Artist II-CHAD-271	3
Art for Reproduction-CHAD-220	3
Certificate Total	19

Technical Communication Certificates

Elizabeth Conley, Chairperson

In this age of information, all kinds of organizations, large and small, have increasing needs for individuals skilled in documenting, packaging, presenting, and managing technical and scientific information. Whether these tasks are done within the company or outside by contract, organizations involved in manufacturing, materials handling, computer products, marketing, and medical and scientific products all need professionally prepared documents, brochures, manuals, and other materials for product users, service technicians, purchasing managers, trainers, and other employees and customers.

The following sequence of courses, designed to be completed in two consecutive quarters of study, is intended to provide a strong, practical foundation in technical communication.

Certificate in Basic Technical Communication	Credit Hours
Phase I:	
Technical Writing & Editing-CHGL-323	4
Research Techniques-CHGL-324	2
Phase II:	
Instructional Design Principles-CHGL-325	2
Document Design Principles-CHGL-326	2
Practicum: Designing Manuals-CHGL-327	2
Total Credits	12

Up to four credits may be awarded by examination or for courses taken at another college. Prerequisite for the Basic sequence is demonstration (by examination, portfolio, or transcript) of a command of standard written English. Students must achieve a program GPA of at least 2.0 in order to be certified.

For those interested in further professional development and instruction in more specialized topics, the following sequence of courses, designed to be completed in two quarters of study, is available.

Certificate in Advanced Technical Communication	Credit Hours
Phase I:	
Writing in the Sciences-CHGL-328	2
Oral Communication Skills for Technical Communicators-CHGL-329	2
Communicating Online-CHGL-330	2
Phase II:	
Promotional Writing-CHGL-331	2
Managing the Project-CHGL-332	2
Audiovisual Presentations-CHGL-333	2
Total Credits	12

Up to four credits may be awarded by examination or for courses taken at another college. Prerequisite for the Advanced sequence is completion of the Basic sequence or the equivalent. Students must achieve a program GPA of at least 2.0 in order to be certified.

Courses in these sequences were developed with the assistance of working technical communicators and are taught by experienced professionals. For advising and further information about these courses, transfer credit and financial assistance, call Betty Conley, 475-4936.

Business and Career Communication

Elizabeth Conley, Chairperson

Business leaders say that a key to success is the ability to communicate successfully. A CCE certificate of achievement in business and career communication may be earned by completing three, four-credit courses designed to cover written, oral, and visual communication skills. Courses may be taken separately and may be used as elective or professional concentration courses in appropriate CCE degrees.

Business and Career Communication Certificate Program	Credit Hours
Professional Presentations-CHGL-301	4
Discussions Skills & Leadership-CHGL-302	4
Communicating in Business-CHGL-307	4
Total	12

Deaf Studies Concentration

Ronald Hilton, Chairperson

Many individuals 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 habilitation, rehabilitation, social services and educational services for deaf people in New York State and across the country.

Deaf studies courses include:

CHGD-211, 212, 213	Sign Language & Manual Communication Systems, I, II & III
CHGD-311, 312	American Sign Language I & II
CHGD-241, 242	Aspects & Issues of Deafness I & II

Fine and Applied Arts and Crafts Diploma Programs

Eric Bellmann, Chairperson

Fine and applied arts courses are designed to contribute to the student's personal growth and cultural enrichment. Individual courses are offered or a diploma may be earned by following a program of study in crafts, fine and applied arts, advertising design, fashion illustration, or interior design.

Options begin with introductory courses to provide students with a basic exploration of the creative process and to help them develop visual organization skills. After taking these courses, the student will be able to earn a fine and applied arts diploma by completing the requirements fn any of five areas.

Students may want to include printing and photography electives in their programs after receiving an advisor's approval. Some electives are offered only in alternate years.

Students enrolled in the fine and 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 Eric Bellmann at 475-4977.

Fine and Applied Arts and Crafts 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
Introduction to 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
Third craft choice	2
Electives with advisor's approval	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	6
Advanced Design and Typography†	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		6
		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
Electives with advisor's approval		10
		48

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

†Formeriy titled Lettering and Layout.

Graphic Arts and Photography

The arts side of Business and the Arts also offers graphic arts programs that are structured to provide students with a broad understanding of the graphic arts field, and, at the same time, allow them to select a major in design, printing, and photography. In addition, programs leading to an AAS in professional photography and an AAS/BS in photographic science are available.

Printing Diploma

Linda Tolan, Adjunct Chairperson

This program utilizes the laboratories of the School of Printing Management and Sciences, which are completely equipped with the most modern printing machinery for all processes of producing the printed word, including flexography screen printing, lithography and gravure. The printing 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 open to students not enrolled as diploma candidates. Courses in the printing diploma (at the 200 level or higher) may be applied towards Graphic Arts degrees.

Printing Diploma Program

	Credit Hours
Introduction to Printing CHGT-201, 202, 203	6
Copy Preparation-CHGT-227	3
Color Separation Camerawork CHGT-111, 112, 113	6
Offset Presswork CHGT-141, 142, 143	6
Offset Film Assembly CHGT-221, 222, 223	9
Reproduction Camerawork CHGT-301, 302, 303	6
Human Relations CBCE-101, 102, 103	6
Printing Electives	4
Total	46

Photography Diploma

Andrew Davidhazy,
Adjunct Chairperson

This sequence of photographic courses is designed to prepare students for the highly competitive field of professional photography. The requirements combine a thorough technical education in photography with an introduction to human relations. Because of the specific nature of the diploma, all six required courses must be completed before a diploma can be earned. Students may apply photography courses completed for the diploma towards the associate in applied science degree in professional photography. Students completing the AAS in professional photography may continue their studies in the Graphic Arts bachelor degree program.

Photography Diploma Program

	Credit Hours
Basic Professional Photography CHGP-201, 202, 203	12
Color Photography CHGP-211, 212, 213	12
Commercial Photography CHGP-241, 242, 243	9
Portrait Photography CHGP-231, 232, 233	9
Portrait Retouching CHGP-331, 332, 333	3
Commercial Retouching CHGP-321, 322, 323	3
Human Relations CBCE-101, 102, 103	6
or	
Psychology: Introduction-CHGS-211	4
Total	52-54

AAS and BS Program in Photographic Science (CHGR)

Andrew Davidhazy, Adjunct Chairperson

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. Electronic image retrieval, analysis and management systems are a powerful new force in the field.

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 students for a promising career as an engineering technician at the completion of the associate degree or as a photographic technologist at the bachelor's level.

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

The program prepares students for an interdisciplinary relationship with chemists, physicists, electrical and mechanical engineers developing new photosensitive systems, improving existing products, or finding new applications for a variety of imaging systems 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, or who want to explore a new or specialized subject.

Technical electives for photographic science (CHGR)
The following is a partial list of courses that fulfill the technical elective requirements for the photographic science program:

CHGR-421 Mathematical Methods in Photographic Science
CHGR-520 Electrostatic Imaging Methods
CHGP-351 Industrial Photography Instrumentation
CQAS-711, 712 Fundamentals of Statistics
CQAS-721 Control Charts
CTDS-202 Introduction to Computer Science
CTDP-305 Assembly Language Programming
CTIL-201, 202, 203 Elements of Electricity and Electronics
CTEM-301 Statics

Other courses not listed above are acceptable. These include 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.

Course requirements, Photographic Science (CHGR), AAS and BS degrees

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
102 Quarter Credits	Phase 1	Algebra & Trigonometry . . . CTAM-210 Engineering Chemistry . CTCC-241,242,243(lec.) -246,247,248 (lab.)	4 12	Communications* . . . . CHGL-220 and Uterature . . . . . CHGH-260 or Dynamic Comm. I* . . . . CHGL-204 and Dynamic Comm. II . . . CHGL-205 Communications Elective	8 8 4	Fundamentals of Photographic Science . . . . CHGR-207,208,209 Black and White Sensitometry . . CHGR-227,228,229	12 12
	Phase 2	Calculus . . . . . CTAM-251,252,253 College Physics CTCP-201,202,203 (lec.) -206,207,208 (lab.)	12 9 3	Psychology . . . . . CHGS-211 Economics CHGS-221	4 4	Radiometry . . . . . CHGR-237,238 Photographic Chemistry . CHGR-217,218,219(lec.) 224,225,226 (lab.)	6 12
92 Quarter Credits	Phase 3	Calculus . . . . . CTAM-305 Differential Equations CTAM-306	4 4	Electives	8	Optics . . . . . CHGR-407,408,409 Image Evaluation . CHGR-417,418,419 Quality Control of Photo-Solutions . . . . CHGR-307,308,309 Color Sensitometry . CHGR-414,415,416	9 9 9 10
	Phase 4	Elective (Statistics) Electives (Computer Programming)	8 4	Electives	8	Theory of Photo Process . . CHGR-527 Theory of Color Process . . CHGR-528 Non-silver Imaging Systems . CHGR-529 Technical Electives	4 4 4 16

In order to meet program objects and prerequisites of later courses, transfer students who have an associate degree may be required to take courses with Phase III and IV for appropriate work completed by the time of transfer.
The AAS degree is awarded upon the student's satisfactory completion of all courses in Phase I and II. In the case of transfer students seeking a degree, 45 credits must be completed at RIT.
"These communications courses require pretest; call 475-2234 for information.
Students who take CHGL-204 should also take CHGL-205; students who take CHGL-220should also take CHGH-260. All BS students must also satisfactorily pass a communications competency test.

AAS Program in Professional Photography (CHGP)

Andrew Davidhazy, Adjunct Chairperson

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 communication, 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 freelance 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 students with a balanced education comprised of courses in science, general education and applied photography. Specific educational goals can be met through careful selection from a comprehensive list of professional electives.

Course requirements
The AAS degree is awarded after completion of 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 students with a broad background in photography so that they may modify general knowledge to fit their particular job specialty.

Although courses are designed to serve the needs of students with a well-defined career objective, most are also suitable for improving photographic background or providing photographic training that would help further develop job skills. After receiving the AAS degree, graduates 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.

Professional electives for professional photography (CHGP) degree

CHGP-404, 405, 406 Architectural Photography
CHGP-241, 242, 243 Commercial Photography
CHGP-401, 402, 403 Fashion Photography
CHGP-221, 222, 223 Illustrative Photography
CHGP-351 Industrial Photography-Instrumentation
CHGP-352 Industrial Photography—A.V. Techniques
CHGP-353 Industrial Photography-Special Topics
CHGP-301, 302 Motion Picture Photography
CHGP-431, 432,433 Photographic Communication
CHGP-411 Photography of the Natural World
CHGP-231, 232, 233 Portrait Photography
CHGP-321, 322, 323 Retouching, Commercial
CHGP-331, 332, 333 Retouching, Portrait
CHGP-366 Dye Transfer Printing

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.

Course requirements, Professional Photography (CHGP), AAS degree

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION		Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
95 Quarter Credits	Phase 1	Technical Mathematics . CTAM-201,202 or Mathematical Thought and Processes CTAM-205 And Modern Mathematical Methods . CTAM-206	8	Communications" CHGL-220 and Literature CHGH-260 or Dynamic Comm. I" CHGL-204 and Dynamic Comm. II CHGL-205 Communications Elective. . . Psychology CHGS-211		8 8 4 4	Basic Professional Photography . . CHGP-201,202,203 Professional Electives	12 12
	Phase2	Electives	12	Economics CHGS-221 Electives		4 4	Color Photography . CHGP-211,212,213 Professional Electives	12 15

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

These communications courses require a pretest; call 475-2234 for information. Students who take CHGL-204 should also take CHGL-205; students who take CHGL-220 should also take CHGH-260. All BS students must also satisfactorily pass a communications competency test.

The Graphic Arts Degree Program (CHGT)

Eric Bellmann
Andrew Davidhazy
Linda Tolan, Chairpersons

This program is structured to provide students 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 a broad practical background in printing, photography, design, and related fields as well as a concentration of study in the student's major. Classroom instruction is supplemented by related work in studios and laboratories where actual experience is gained.

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

Course requirements, Graphic Arts (CHGT), 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 1	Technical Mathematics . CTAM-201,202 or Mathematical Thought and Processes. . . . . .CTAM-205 And Modern Mathematical Methods. CTAM-206	8	Communications*. . . . .CHGL-220 and Literature. . . . . .CHGH-260 or Dynamic Comm. I*. . . . .CHGL-204 and Dynamic Comm. II. . . . .CHGL-205 Communications Elective Psychology. CHGS-211	8 8 4 4	Intro to Printing . . CHGT-201,202,203 Basic Professional Photography . . CHGP-201,202,203 Basic Design CHAD201,202,203	6 12 6
	Phase 2	Contemporary Science. . . . .CTCS-221,222,223 or Engineering Chemistry . CTCP-201,202,203 (lec) -246,247,248 (laD) or Physics . . . . CTCP-201,202,203 (lec) -206,207,208 (lab)	12	Economics. . . . . .CHGS-221 Electives (Humanities)	4 4	Paper and Printing . . . CHGT-251,252 Copy Preparation. . . . . .CHGT-227 Technology of Typesetting . . CHGT-237 Graphic Design . . CHAD-311,312,313 Professional Electives	4 3 2 6 9
92 Quarter Credits	Phase3	Science, Technology and Society Electives	8	Electives	20	Reproduction Camerwork . . CHGT-301,302,303 Printing Plates. . . . .CHGT-231,232 Printing Process. . . . . .CHGT-341 Advertising. CHAD-301,302	6 4 2 8
	Phase 4	1		Electives	16	Estimating. . . . . .CHGT-219 Imposition and Finishing . . . CHGT-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 Phase III and IV for appropriate work completed by the time of transfer.
'These communications courses require pretest; call 475-2234 for information. Students who take CHGL-204 should also take CHGL-205; students who take CHGL-220should also take CHGL-260. All BS students must also satsifactoriiy pass a communications competency test.

Science and Technology

Henry Cooke, Director
Barbara Warth, Academic Program Assistant

This division in CCE offers a variety of technical and scientific programs of study. Included are:

- AS in engineering science, computer science*
- AAS in applied science in building technology, electrical technology, electromechanical technology, manufacturing technology, mechanical technology, and computer systems
- BS in applied science in chemistry, mechanical, electrical and mechanical-industrial

• pending approval by New York State Education Dept.

Each program is carefully designed to meet the student's needs as well as the particular needs of local industry for technical personnel trained to meet the requirements of Rochester's expanding industrial community.

Courses for people on rotating work schedules
If rotating work schedules make it impossible for an individual to attend regular evening classes, enrollment in certain courses is also offered during the day, and are taught by the same instructors.

Courses in this program include basic technical and general education courses which can be applied to a diploma or AAS degree program. 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
In order to take any of the beginning mathematics courses, a student must take a diagnostic examination to determine the level at which he or she should start the mathematics courses. An advisor should be consulted to determine where to start the mathematics sequence. Call 475-2234 to arrange an appointment to take the math exam. There is no charge for this exam.

Degree Programs BS in Applied Science

The BS in applied science programs is designed for the individual with better than average preparation in high school mathematics and science. If a student is deficient in mathematics, he or she 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 student to develop some depth in the interest area of choice.

After completing approximately half the courses in the BS program, students receive an AAS degree. If the student already holds an AAS degree, he or she may be able to enter a BS program with minimal loss of credit. Consult an advisor for transcript evaluation before entering these programs.

Applied Science-Chemistry Program (CTCC)

Alfred C. Haacke, Chairperson

The chemistry curricula leading to the AAS and BS degrees are designed to provide students with a sound background in the fundamental principles in a broad spectrum of chemistry 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 students with the opportunity for specialization in the area of their choice.

Courses need not be taken within any phase in the sequence listed as long as all courses in one phase are completed before proceeding to the next phase. The AAS degree is awarded upon satisfactory completion of all courses in Phases I and II. Transfer students must complete 45 credits of this program at RIT before receiving a degree.

Course requirements, (CTCC), AAS and BS degrees

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIO M L	Qtr. Cr.
	Phase 1	College Algebra and Trigonometry . . . . . CTAM-210 Calculus CTAM-251,252 Computer Techniques CTDP-201	4 8 2	Communications*. . . . .CHGL-220 and Literature. . . . . .CHGH-260 or Dynamic Comm. I*. . . . .CHGH-204 and Dynamic Comm. II. CHGL-205	8 or 8	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 2 4 13
	Phase2	Calculus CTAM-253 Physics . . . . CTCP-301,302,303 (lec.) CTCP-306,307,308 (lab.)	4 12 3	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
	Phase3	. . CTAM-305 Engineering Statistics . CTAM-341 Mathematics Elective .	4 4 4	Literature Elective	4 4	Technical Writing. CTCC-417 Qualitative Organic Analysis . . CTCC-525(lec.) 535 (lab.) Physical Chemistry . CTCC-401,402,403 (lec.) 405,406,407 (lab.)	2 3 15
	Phase 4	Modern Physics CTCP-457,458	8	"Electives	16	Instrumental Analysis CTCC-511,512 Inorganic Chemistry CTCC-551 + Professional Electives	8 4 21

** These communications courses require pretest; call 475-2234 for information. Students who take CHGH-204 also take CHGL-205. All BS students must also satisfactorily pass a communications competency test.*

" These electives must be selected from the areas of humanities, communications or behavioral sciences offered in the liberal arts 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 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.

Applied Science-Electrical Program (CTBE)

Henry Cooke, Chairperson

This intensive program in the electrical field includes a sound basis in mathematics, science and general engineering. This broad fundamental curriculum will provide 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.

Courses need not be taken within any phase in the sequence listed, as long as courses in one phase are completed before proceeding to the next phase. The AAS degree is awarded upon satisfactory completion of all courses in Phases I and II. If you are a transfer student seeking a degree, you must 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.
	Phase 1	College Algebra and Trigonometry CTAM-210	4	Communications* CHGL-220		Engineering Graphics CTID-211,212	4
		Calculus.... CTAM-251,252	8	and	8		
		Computer Techniques CTDP-201	2	Literature CHGH-260			
		Engineering Chemistry CTCC-241,242 (lec.)	6	or	or		
		246,247 (lab.)	2	Dynamic Comm. I* CHGL-204			
				and	8		
				Dynamic Comm. II CHGL-205			
	Phase2	Calculus.... CTAM-253	4	Economics CHGS-221	4	Engineering Mech. . . . CTBM-341,342	8
		Calculus.... CTAM-305	4	Psychology CHGS-211	4	Circuit Analysis . . CTBE-401,402,403 (lec.)	12
		Physics . . . . CTCP-301,302,303 (lec.)	12			406,407,408 (lab.)	
		306,307,308 (lab.)	3			Materials Technology I . . CTEF-314	3
		Engineering Math . . CTAM-328	4			Materials Technology II . . CTEF-315	3
	Phase 3	Differential Equations CTAM-306	4	History or Political Science Elective	4	Electric and Magnetic Fields CTBE-411,412,413	12
		Modern Physics CTCP-457,458	8			Electronics CTBE-421,422,423	12
		Nuclear Physics CTCP-459	4			Thermodynamics CTBM-401	4
	Phase 4	Complex Variables . , GTAM-420	4	"Electives	12	Electromechanical Energy Conversion . . CTBE-501	4
				Literature Elective	4	Control Systems CTBE-511,512	8
						Electives	12

** These communications courses require pretest; call475-2234 for information. Students completing BS degrees must also pass a communications competency test.*

" 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)

Henry Cooke, Chairperson

The mechanical-industrial curriculum integrates management courses with courses in engineering, science and general education in order to satisfy industry's need for qualified personnel in the manufacturing management field. Graduates of this program have a combined background in management and engineering. Students need not take courses in the order listed, as long as all courses are completed in one phase before proceeding to the next phase. After successfully completing all courses in Phases I and II, students receive an AAS degree. In the case of transfer students seeking a CCE degree, 45 credits of this program must be completed at RIT.

Course requirements, (CTBI), AAS and BS degrees

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
	Phase 1	College Algebra and Trigonometry CTAM-210	4	Communications* CHGL-220	8	Machine Shop . CTIS-201,202,203 (lec.) 206,207,208 (lab.)	6
		Calculus.... CTAM-251,252	8	and Literature CHGH-260		Engineering Graphics CTID-211,212,213	6
		Computer Techniques . CTDP-201	2	or	or	Accounting for Engineers CBCA-207,208	8
		Physics .... CTCP-301,302,303 (lec.) 306,307,308 (lab.)	12 3	Dynamic Commun. I* .... CHGL-204 and Dynamic Comm. II CHGL-205	8		
	Phase2	Calculus.... CTAM-253	4	Economics CHGS-221	4	Organization and Management. CBCE-203	4
		Calculus.... CTAM-305	4	Psychology **CHGS-211**	4	Engineering Mechanics . CTBM-341,342	8
						Manufacturing Analysis CTEF-201,202,203	9
						Strength of Materials CTBM-344 (lec.) 354 (lab.)	3 1
	Phase 3	Engineering Chemistry . CTCC-241,242 (lec.) 246,247 (lab.)	6 2	Psychology - Behavior in Industry CHGS-316	4	Data Processing CBCC-321	4
		Engineering Statistics CTAM-341,342	8			Electrical Engineering Principles .. CTBE-461,462,463	12
	Phase4	Mathematics Elective	4	Sociology CHGS-231	4	Fundamentals of Industrial Engineering . CBCJ-305	4
				Professional Presentations . CHGL-301	4	Industrial Engineering Economy CBCJ-306	4
				"Electives	12	Electives	24

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

' These communications courses require pretest; call475-2234 for information. Students completing BS degrees must also pass a communications competency test.

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

Engineering Science (CTSE)

Alfred C. Haacke, Chairperson

This AS program in engineering science is designed to prepare the student to pursue a BS in engineering. The program permits orderly transfer into RIT's College of Engineering to continue pursuit of the baccalaureate degree in 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).

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

After earning the AS degree in engineering science students are eligible to apply to the College of Engineering for admission in the baccalaureate program in engineering. Students accepted in this program can complete an engineering degree through continued part-time study.

Course requirements, Engineering Science (CTSE), AS Degree

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION		Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
48 Quarter Credits	Phase 1	Calculus.... CTAM-251,252,253	12	Communications	CHGL-220	4	Engineering Graphics CTID-211	2
		Physics . . . . CTCP-301,302,303 (lec.)	12	or		or	Engineering Mechanics . CTBM-341,342	8
		306,307,308 (lab.)	3	Dynamic Comm. I*	CHGL-204		Computer Programming	
				and		8	for Engineers . . CTDP-320	4
				Dynamic Comm. II	CHGL-205			
48 Quarter Credits	Phase 2	Calculus CTAM-305	4	Psychology	CHGS-211	4	Circuit Analysis CTBE-401 (lec.)	
		Differential Equations CTAM-306	4	Economics	CHGS-221	4	406 (lab.)	4
		Engineering Math CTAM-328	4	Sociology	CHGS-231	4	Digital Systems CTEE-321 (lec.)	3
		Engineering . . CTCC-241,242 (lec.)	6	Literature	CHGH-260	4	CTEE-326 (lab.)	1
		Chemistry . . . . . 246,247 (lab.)	2					
		Modem Physics . . . CTCP-457,458	8					

" These communications courses require pretest; call475-2234 for information.

Mechanical Program
(CTBM)

Henry Cooke, Chairperson

This curriculum is designed to provide the student with a sound basis in mathematics, science and general engineering. Courses in theory are supplemented by laboratory work to increase the understanding of industrial methods and techniques. The knowledge and skills acquired in this program apply to a wide variety of industrial assignments in mechanical design and manufacturing.

Courses need not be taken in the order listed, as long as all courses in one phase are completed before proceeding to the next phase. 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.
	Phase 1	College Algebra and Trigonometry CTAM-210 Calculus.... CTAM-251,252 Computer Techniques CTDP-201 Engineering Chemistry . CTCC-241,242 (lec.) 246,247 (lab.)	4 8 2 6 2	Communications* CHGL-220 and Literature CHGH-260 or Dynamic Comm. I" CHGL-204 and Dynamic Comm. II CHGL-205	8 or 8	Machine Shop . CTIS-201,202,203 (lec.) 206,207,208 (lab.) Engineering Graphics CTID-211,212,213	6 6
	Phase 2	Calculus .... CTAM-253 Calculus .... CTAM-305 Physics .... CTCP-301,302,303 (lec.) 306,307,308 (lab.) Math Elective .	4 4 12 3 *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
	Phase3	Differential Equations CTAM-306 Boundary Value Problems CTAM-318 Modem Physics CTCP-457,458 Nuclear Physics CTCP-459	*4* 4 8 4 '	History or Political Science . . Psychology CHGS-211	4 4	Strength of Materials CTBM-345 Materials Technology I . CTEF-314 Materials Technology II . CTEF-315 Thermodynamics CTBM-401,402 Electrical Engineering Principles . . CTBE-461,462,463	4 3 3 8 12
	Phase 4			"Electives Literature Elective	12 4	Machine Design CTBM-551,552,553 Fluid Mechanics CTBM-411,412 Electives	9 8 6

• These communications courses require pretest; call 4 75-2234 for information. Students completing BS and B. Tech. degrees must also pass a communications competency test.

" 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.

Computer Science Associate in Science Degree**

Alfred C. **Haacke,** Chairman

The AS program in Computer Science is designed to prepare the student to pursue a B.S. degree in computer science. The program permits orderly transfer into RIT's School of Computer Science and Technology to continue studying towards the baccalaureate degree offered part-time during evening hours by the School of Computer Science and Technology. Part-time B.S. degree students of the School of Computer Science and Technology must complete all of the school's requirements, including co-op.

Prospective students are urged to meet with an academic advisor before enrolling in this program. Please call 475-2218 for an advising appointment.

Course requirements, AS Degree, Computer Science

		MATHEMATICS AND SCIENCE		Qtr. Cr.	GENERAL EDUCATION		Qtr. Cr.	PROFESSIONAL		Qtr. Cr.
48 Quarter Credits	Phase 1	Calculus	CTAM-251	4	Communications*	CHGL-220	4	Introduction to Computer Science	CTDS-202	4
		Calculus	CTAM-252	4	or		or			
		Calculus	CTAM-253	4	Dynamic Comm. 1*	CHGL-204		Programming 1- Algorithmic Structures . . .	CTDP-241	4
		Discrete Mathematics	CTAM-265	4	and		8			
		Discrete Mathematics	CTAM-266	4	Dynamic Comm. II	CHGL-205		Programming II- Data Structures	CTDP-242	4
					Humanities Electivest . . .	CHGH-	8	Assembler Language	CTDP-305	4
48 Quarter Credits	Phase2	Engineering Statistics	CTAM-341	4	Social Science Electivest. .	CHGS-	8	Programming III- Design and Implementation .	CTDP-243	4
		Physics	CTCP-301	4	Literature	CHGH-260	4			
		Physics Lab	CTCP-306	1	Liberal Arts Elective	CHG?-	4	Digital Computer Organization 1	CTDS-315	4
		Physics	CTCP-302	4						
		Physics Lab	CTCP-307					Data Organization and Management	CTDS-325	4
		Physics	CTCP-303	4						
		Physics Lab	CTCP-308	1				Computer Science Elective*		4

** Students may choose from:*
CTDP-307 Business Applications Programming
CTDP-320 Computer Programming for Engineers
† Courses may not be chosen from the same discipline.
" Pending approval by the New York State Education Department.

Associate in Applied Science Programs (AAS)

Henry Cooke, Chairperson

Industrial Technnology
Associate degree programs in building technology, electrical technology, electromechanical technology, and mechanical technology 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.

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.

Several of these beginning courses are offered on a shift schedule to accommodate 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.

Courses need not be taken within any phase in the order listed, so long as all courses in one phase are completed before proceeding to the next phase. After successfully completing all courses in Phases I and II, the student will receive an AAS degree (about 5 years of two courses per term). A student transferring from another institution 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 (CTIE)
This program is designed to prepare the student for a career at the technician level in the field of electricity and electronics.

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

Course requirements, (CTIE), AAS degree

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION		Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
95 Quarter Credits	Phase 1	Technical Mathematics . CTAM-201,202	8	Communications*	CHGL-220		Engineering Graphics CTID-211,212	4
		Technical Calculus . . . CTAM-203	4	and		8	Elements of Electricity and	
		College Physics CTCP-201,202,203 (lec.)	9	Literature	CHGH-260		Electronics . . CTIL-201,202,203 (lec.)	12
		206,207,208 (lab.)	3	or		or	206,207,208 (lab.)	
				Dynamic Comm. I"	CHGL-204			
				and		8		
				Dynamic Comm. II	CHGL-205			
	Phase2			Psychology	CHGS-211	4	Applied Electronics . CTEE-361,362,363	12
				Economics	CHGS-221	4	366,367,368	
							Machines and Power CTIL-301,302	8
							Systems . . . 306,307	
							Computer Techniques CTDP-201	2
							Digital Systems . CTEE-321	3
							Digital Systems (lab) . CTEE-326	1
							Programmable Controllers CTEE-331	3
							Microprocessors CTIL-353	3
							Microprocessors (lab) CTIL-358	1
								4

† All electives must be selected with advisor's approval.
' These communications courses require pretest; call475-2234 for information.

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." A graduate of this dual-discipline program will be qualified to assist in design and development of new devices and to install, operate, service and maintain complex electromechanical assemblies. A graduate 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

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
95 Quarter Credits	Phase 1	Technical Mathematics . CTAM-201,202 College Physics CTCP-201,202,203 (lec.) 206,207,208 (lab.)	8 9 3	Communications' CHGL-220 and Literature CHGH-260 or Dynamic Comm. I* CHGL-204 and DynamicComm.il CHGL-205	8 or 8	Engineering Drawing . CTID-201,202,203 Elements of Electricity and Electronics . . CTIL-201,202,203 (lec.) 206,207,208 (lab.) Mechanical Components and Mechanisms . CTIL-221,222	6 12 8
	Phase2			Psychology CHGS-211 Elective	4 4	Machine and Power Systems . . . CTIL-301,302 (lec.) 306,307 nab.) Pneumatic and Hydraulic Systems . . . . CTIL-303 (lec.) 308 (lab.) Digital Systems . CTEE-321 CTEE-326(lab.) Computer Systems . . CTEE-323 Electromechanical Devices and Systems . . . . CTIL-351,352 Microprocessors (lec.) CTIL-353 Microprocessors (lab.) CTIL-358	8 4 3 1 3 8 3 1 3

• *These communications courses require pretest; caii 4 75-2234 for information.*

Building Technology (CTIJ)
David Onesti, Adjunct Chairperson

This program is structured to provide the student with a broad understanding of the building industry, while majoring in architectural technology or construction technology.

The architectural technology major provides in-depth training in all aspects of architectural drawing to qualify a graduate for employment as an architectural technician. The professional courses in this major are designed to meet individual requirements.

The construction technology major provides a more general background in building construction and qualifies the student 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

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION		Qtr. Cr.	PROFESSIONAL		Qtr. Cr.
95 Quarter Credits	Phase 1	Technical Mathematics . CTAM-201,202	8	Communications*	CHGL-220		Architectural Drawing		
		College Physics CTCP-201,202,203 (lec.)	9	and		8	CTIB-201,202,203,204,205,206		12
		206,207,208 (lab.)	' 3	Literature	CHGH-260				
				or		or			
				Dynamic Comm. I*	CHGL-204				
				and		8			
				Dynamic Comm. II	CHGL-205				
	Phase2			Economics	CHGS-221	4	Architectural Drawing"	CTIB-207,208,209	6
				Elective		4	Statics	CTEM-301	4
							Strength of Materials	CTEM-303	4
							Building Materials . .	CTIB-241	3
							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

AH electives must be selected with advisor's approval.
' These communications courses require pretest; call 475-2234 for information.
" Required for Architectural Technology.
"" Required for Construction Technology

Mechanical Technology (CTIM)
This program is designed to prepare a student 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, (CTIM), AAS degree

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
95 Quarter Credits	Phase 1	Technical Mathematics . CTAM-201,202 Technical Calculus . . . . CTAM-203 College Physics CTCP-201,202,203 (lec.) 206,207,208 (lab.)	8 4 9 3	Communications* CHGL-220 and Literature CHGH-260 or Dynamic Comm. I* CHGL-204 and Dynamic Comm. II CHGL-205	8 or 8	Engineering Drawing . CTID-201,202,203 Machine Shop . . . CTIS-201,202,203 206,207,208 (lab.)	6 6 3
	Phase2			Economics CHGS-221 Psychology CHGS-211	4 4	Manufacturing Analysis .. CTEF-201,202 Applied Mechanics and Strength of Materials . . . CTEM-301,302,303 Materials Technology I . . CTEF-314 Materials Technology II . . CTEF-315 Production Control . CTEF-391 Principals of Mechanical Design CTEM-315,316,317 Elective	6 12 3 3 3 6 6

" These communications courses require pretest; call475-2234 for information.

Manufacturing Technology (CTED)
This program is designed to prepare a student 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.

Lower Division Technical Electives

Mechanical/Manufacturing Electives

CTEF-203 Manufacturing Analysis
CTEF-210 Industrial Plastics
CTEF-328 Report Writing
GTEF-360 Introduction to Numerical Control

Course requirements, (CTED), AAS degree

		MATHEMATICS ANOSCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
95 Quarter Credits	Phase 1	Technical Mathematics . CTAM-201,202 Technical Calcu us . . . CTAM-203 Introduction to Computer and Programming . CTDS-200	8 4 4	Communications* CHGL-220 and Literature CHGH-260 or Dynamic Comm. I* CHGL-204 and Dynamic Comm. II CHGL-205	8 or 8	Machine Shop . . . CTIS-201,202,203 206,207,208 (lab.) Engineering Drawing . CTID-201,202,203 Materials Technology I CTEF-314 Materials Technology II CTEF-315	6 6 3 3
	Phase II	College Physics CTCP-201,202,203 (lec.) 206,207,208 (lab.)	9 3	Economics CHGS-221 Psychology CHGS-211	4 4	Manufacturing Analysis CTEF-201,202 Intro to Numerical Control CTEF-360 Statics CTEM-301 Strength of Materials CTEM-303 Report Writing . . . . CTEF-328 Time Study CTEF-380 Tool Design CTEF-370 Technical Electives . .	6 4 4 4 2 3 4 6

" These communications courses require pretest; call475-2234 for information.

Computer Systems Associate in Applied Science Degree

Alfred C. Haacke, Chairperson

The goal of this program is to provide students with the programming skills and the computer science fundamentals to enter careers as computer programmers in business or information systems.

Aside from programming skills, students acquire some of the mathematics necessary to move from programming as an art to programming as a science.

Prospective students are urged to see an advisor before enrolling in classes. For an advising appointment call 475-2218.

Course requirements, (CTDD), AAS Degree

		MATHEMATICS AND SCIENCE	Qtr. Cr.	GENERAL EDUCATION	Qtr. Cr.	PROFESSIONAL	Qtr. Cr.
	Phase 1	Technical Mathematics . . . CTAM-201 Technical Mathematics . . . CTAM-202 Discrete Mathematics . . . . CTAM-265 Discrete Mathematics . . . . CTAM-266 Business Statistics CBCH-351	4 4 4 4 *	Communications* CHGL-220 and Literature CHGH-260 or Dynamic Comm. I* CHGL-204 and Dynamic Comm. II CHGL-205 Humanities Electives . . . . CHGH-	8 or 8	Introduction to Computer Science CTDS-202 Programming I- Algorithmic Structures . . CTDP-241 Programming II- Data Structures CTDP-242 Assembler Language CTDP-305	4 4 4 4
	Phase2			Social Science Electives . . CHGS- Liberal Arts Electives . . . . CHG?-	8 8	Programming III- Design and Validation . . . CTDP-243 Digital Computer Organization CTDS-315 Data Organization and Management CTDS-325 Business Applications Programming CTDP-307 System Specification, Design and Implementation . . . . CTDS-335 Computer Science Elective* Organization and Management . CBCE-203 Financial Accounting CBCA-201	4 4 4 4 4 4 4

* *Students may choose from:*
CTDS-420 Data Communications Systems
CTDS-485 Data Base Systems

School of Applied Industrial Studies

The School of Applied Industrial Studies (SAIS) was initiated in the late 1970s to help meet the need for skilled workers in Rochester industry. The School of Applied Industrial Studies is a reaffirmation of some of the original concepts of RIT.

RIT's roots go back to the Rochester Athenaeum, 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 Athenaeum 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."

SAIS has been established at RIT's City Center where extensive modern equipment and facilities are available to carry out this historic mission of RIT. SAIS programs are designed especially to prepare persons for entry level positions in a wide range of industrial organizations.

Computer-Aided Drafting Certificate
Part-time Evening
Computer-Aided Drafting is changing the role of drafters, designers, and engineering professionals. This has resulted in a need for advanced skills and knowledge in order to remain on the cutting edge of technology. The School of Applied Industrial Studies is prepared to assist you in developing these skills with two CAD Certificate Program Options in Mechanical CAD and CAD/CAM for Printed Circuit Board Design. The course requirements will vary depending upon your prior academic and employment experience. Each course is designed to teach CAD concepts as well as the specific system commands without prior computer or CAD experience. Upon the successful completion of the option requirements, students will receive a Certificate of Completion from the School of Applied Industrial Studies.

Certificate requirements

Option "A"

CAD Printed Circuit Board Design

Course requirements

CAIC-212	Schematic Interpretation
CAID-249	Fundamentals of Designing Printed Circuits
CAID-251	CAD/CAM-PCB Layout

OR

Option "B"

CAD Mechanical

Course requirements

CAID-245	Introduction to CAD
CAID-247	Computer-Aided Drafting
CAID-248	Special Study CAD/CAM

Diploma Programs
A diploma of the Institute can be earned by completing one of four technical diploma programs. These programs are carefully planned to include the basic courses in their respective specialized fields, so that maximum benefit will accrue for a minimum expenditure of time. Enrollment in or completion of a diploma program does not preclude the possibility of later pursuing a degree program; in fact some courses are applicable to degree programs if the student 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: automatic screw machine operation and set-up; instrument making and experimental work; machine shop; tool and die making; turret lathe and chucker operation and set-up.

Machine Tool Programs
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
For tool room work, there are a number of precision machines to perform the required machining operations such as: Bridgeport vertical mills, Pratt & Whitney jig bore, cylindrical grinders, surface grinders, electrical discharge machines (EDM), engine lathes, pantograph machine and punch presses for trying out of dies. Other active facilities in the machine shop are numerical control, computer-aided manufacturing (CAM), and heat treating labs.

When registering for the following programs, a student must register in the proper sequence. For example, when Shop Mathematics (CTIS-151) has been completed, the next course to complete would be CTIS-152, etc.

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 seeking advanced standing in subjects in the machine shop area, a student must submit transcripts of courses taken at other schools and/or take an examination in those courses for which the student seeks credit. The examination fee is $50 per course. An admission card must be received before being admitted to the test. The test may be scheduled at City Center. For further information call Orville Adler, at 475-5006.

Course Requirements

	TOOL AND DIE MAKING (CTML)	
Phase 1		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 II	CTIS-127,128,129
	Electives (any 3 quarters)	

	INSTRUMENT MAKING AND EXP. WORK (CTMI)	
Phase 1	Mechanical Blueprint 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
5	Electives (any 3 quarters)	

	MACHINE SHOP (CTMS)	
Phase 1	Mechanical Blueprint 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 of the following):

Precision Measurement	CTIS-101,102,103
Engineering Drawing	CTID-201,202,203
Industrial Plastics	CTEF-210
Numerical Control (CNC) Mill	CTIS-281
Numerical Control (CNC) Lathe	CTIS-282
Computer Programming for N/C (CAM)	CTIS-283
Mechanical Blueprint Reading II	CTID-102

Starting Classes for B Shift or Tricker

Fall	Winter
Mach. Shop Lec. CTIS-201	Math CTIS-157
Mach. Shop Lab CTIS-206	

(May come either AM or PM)

	AUTOMATIC SCREWMACHINE, SET-UP AND OPERATE (CTMR)	
Phase 1	Hand Screw Machine	CTIS-131,132,133
	Mechanical Blueprint Reading	CTID-101
	Shop Mathematics	CTIS-151,152
2	Automatic Screw Machine I	CTIS-134,135,136
	Human Relations	CBCE-101
3	Automatic Screw Machine II	CTIS-137,138,139
	Electives (any three quarters)	

Winter	Spring	Summer
Mach. Lec. CTIS-201	B/P CTID-101	Mach. Lec. CTIS-204
Mach. Lab. CTIS-206		Mach. Lab. CTIS-209
MathCTIS-157		
B/PCTD-101		

Graduate Studies in Applied and Mathematical Statistics

Statistics is the body of theories and methods which deals with the data obtained by counting or measuring the properties of populations. It may also be regarded as the science of making decisions in the face of uncertainty. Today, statistical methods are being successfully applied to solve problems and to enhance learning over a broad spectrum of industrial, research, educational, business, and government activities. To aid those needing the basic statistical tools to collect and analyze data, as well as those needing to update their present statistical skills, the master of science degree in applied and mathematical statistics is offered by the College of Continuing Education at RIT through the Center for Quality and Applied Statistics. Several options, including thesis and non-thesis options, are available. Students electing a plan of study that includes a thesis must successfully complete 36 quarter hours of course work in addition to an acceptable thesis. Non-thesis options require the candidate for the MS to successfully complete 45 quarter hours of course work.

Requirements
For the master of science in applied and mathematical statistics degree, the satisfactory completion of the following courses is required:

Two basic courses:
(These may be waived by the department chairperson upon evidence of equivalent learning, experience or competency.) CQAS-711 and 712 Fundamentals of Statistics I & II

Six core courses:
CQAS-742 Statistical Computing
CQAS-801 and 802 Design of Experiments I & II
CQAS-821 and 822 Theory of Statistics I & II
CQAS-841 Regression Analysis I

The core courses are expected to be completed early in a student's program. Upon completion of the core courses or after 30 hours of instruction, a written examination is required. After successful completion of the examination, the remainder of the program is prepared with the advice and counsel of the departmental advisor.

Four required career options courses:
A new feature of the MS program is a logical grouping of core requirements, existing and new courses, which will allow the student to specialize within his or her career endeavors. The five specialized career options are:

Quality Control in Industry
CQAS-721 Statistical Quality Control I
CQAS-731 Statistical Quality Control II
CQAS-781 Quality Management
CQAS-782 Quality Engineering

Industrial Statistics
CQAS-761 Reliability
CQAS-783 Quality Engineering by Design
CQAS-856 Interpretation of Data
CQAS-875 Empirical Modeling

Administrative Applications of Quality Control
CQAS-781 Quality Management
CQAS-853 Managerial Decision Making
CQAS-873 Time Series Analysis
CQAS-881 Bayesian Statistics

Statistical Theory and Methods
CQAS-824 Probability Models
CQAS-830 Multivariate Statistics I
CQAS-831 Multivariate Statistics II
CQAS-842 Regression Analysis II

Quality Control in the Health Sciences
CQAS-721 Statistical Quality Control I
CQAS-791 Statistical Methods in Health Sciences
CQAS-792 Biological Assays
CQAS-851 Nonparametric Statistics

Each career option has four required courses. A departmental advisor will work with each student in identifying the appropriate career option and in developing a total program structured to achieve individual professional objectives.

Five electives may be 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.

Department of Career and Human Resource Development

Dr. Dorothy Paynter, Director

Human Resource Development Today
The field of human resource development continues to expand and gain stature as an independent field. Government, industrial, educational, and other organizations are recognizing that their future success depends on cultivating the potential of the people who work at all levels in the organization —not only in top positions, but also in entry-level and middle-level positions. Competent executives who are mapping their organizations' futures do not ignore the fact that their people are the single most important resource for ensuring future success.

These executives and their organizations are turning to individuals with the necessary skills and knowledge to assist in this important process. These individuals, identified by a variety of titles—trainers, counselors, internal and external consultants, personnel administrators, human resource planners—need very specific education, training and skills.

Graduates of RIT's program in Career and Human Resource Development meet this need.

The Program
The Career and Human Resource Development Program is a 52 quarter credit hour program with three major curriculum components: career development, organizational development, and human resource development. Students are required to take a theory course and a techniques course in each area. Two additional techniques courses are required. Students have the option of concentrating in a specific area through their choice of additional techniques courses and electives.

Many work environments are open to graduates of the program. Students focus on the environment of their choice—education, business, industry, public agencies—through their selection of projects, research topics and the setting of their internship.

Admissions Requirements
Admission requirements for the master of science degree include:

- Successful completion of the baccalaureate degree at an accredited college or university.
- A cumulative grade point average of 3.0 or above or evidence of relevant professional performance.
- Two letters of reference.
- A recent writing sample.
- An oral presentation.
- An interview with program faculty.

All credentials must be submitted and reviewed by the faculty prior to the completion of 12 quarter credit hours of graduate work in the program.

Application forms are available from the Office of Graduate Studies, RIT Admissions, or the department. Call 475-5062 for further information.

Financial Assistance
In addition to the assistance available through the RIT Financial Aid Office (716/475-2186) or the dean of Graduate Studies (716/475-6523), the department has scholarship and assistantship opportunities. The number and kind vary from year to year. For more information contact the CHRD Department (716/475-5062) for further information.

Degree Requirements
The degree requires the completion of a minimum of 52 quarter hours at the graduate level. Of the 52 hours, 24 are in nine courses required of all students.' In addition, all students are required to complete 15 credits in techniques courses and 13 credits of electives. The degree can usually be completed in five consecutive quarters if the student starts in the Fall Quarter. However, the majority of students attend part time and take from two to four years to complete the degree work. Students must maintain a B average, and complete the degree within seven years from the first course taken and applied to the degree. Almost all courses are offered in the evenings, giving students the freedom to work during the day while they take courses.

Students are relatively free to choose the electives they feel best meet their needs. The only restrictions are: all courses must be graduate-level courses; a maximum of 12 quarter hours (not counted toward another degree) may be transferred from another college or university; a maximum of 12 hours may be taken outside the department of Career and Human Resource Development.

Upon matriculation, each student is assigned an academic advisor. At this time the student and advisor will develop a plan of study. For specific questions about courses and a plan of study, the advisor or department director should be consulted.

Required Courses	Credit Hours
Introduction to Career & Human Resource Development-CHRD-700	3
Assessment Methods in CHRD-CHRD-705	3
Statistical Concepts-CQAS-701	3
Theory of Organizational Development-C HRD-710	3
Theories of Qareer Development-CHRD-720	3
Theory of Human Resource Development-C HRD-7 30	3
Internship-CHRD-877	6

For students with appropriate professional experience special projects or additional course work may be substituted for the Internship. Departmental approval is required.

Organizational Development Techniques Courses

Futures Research & Simulation-CHRD-711	3
Planning & Evaluation in Organizational Development-CHRD-712	3
Practice of Consultation in Organizational Development-CHRD-713	3

Career Development Techniques Courses

Individual Career Counseling Techniques-CHRD-721	3
Career Counseling Techniques for Groups-CHRD-722	3
Information Use in Career Planning-CHRD-723	3

Human Resource Development Techniques Courses

Techniques of HRD-CHRD-731	3
Design & Delivery of Training-C HRD-732 *	2
Needs Assessment & Problem Solving Techniques-CHRD-733	3

**CHRD-732 may be taken more than once.*

Electives

Microcomputer Applications in CHRD-CHRD-750	3
Special Projects-CHRD-850	Variable
Special Topics-CHRD-891	3

Electives May Include:
Techniques courses not applied to degree requirements.

Courses in other graduate-level programs at the Institute with permission of advisor.

Degree Requirements

24	Credits—Required Courses
15	Credits—Techniques Courses
13	C redits—Electives
52	Credits Total

College of Continuing Education

Business and the Arts

Accounting

CBCA-201 **Financial Accounting**
Registration #0201-201
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

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 budcdet and the use of accounting data for control and profit planning. (CBCA-201)

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-308, 309 **Intermediate Accounting I & II**
Registration #0201-308, 309
Designed to broaden understanding of accounting practices and improve skills in gathering, analyzing, reporting, and evaluating accounting theory and concepts as they relate to business problems. (CBCA-203)

Credit 4/Qtr.

Business Law

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 agency, partnerships, corporations, insurance and bankruptcy. Also presents survey of commercial paper, secured transactions, and bank deposits.

Credit 4

CBCB-310 **Legal Environment of**
Registration #0202-310 **Business**
Foundation course which introduces: the function of law in society; the fundamentals of the federal and state court systems; contract formation (offer, acceptance, consideration, and capacity) and related ethical issues; and the emergence of the federal regulatory agencies and the practical impact of these agencies on the American business community.

Credit 4

Data Processing and Systems Analysis

CBCC-321 **Data Processing Principles**
Registration #0203-321
Introduction to computer technology including an examination of the current concepts, functions and techniques associated with information processing. This course includes discussion and practical examples of the interrelatedness of computer operations, programming, and systems analysis. Typically includes minimal introductory exposure to computer lab and a few computer applications assignments.

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. (CBCC-321 or equivalent)

Credit 4

CBCC-351 **BASIC Programming for**
Registration #0203-351 **Business**
An introduction to computers and computer programming for business students. After a brief survey of computer systems and terminology, this course introduces the student to BASIC programming covering all major functions; problems and examples will be drawn from business applications. Students will learn how to use a time-shared computer system. NOTE: Not for computer science majors.

Credit 2

Finance

CBCD-204 **Personal Financial**
Registration #0204-204 **Management**
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-304 **Personal Financial Decision**
Registration #0204-304 **Making**
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, investments, and estate transfers. Throughout the course basic mathematical concepts (compounding, discounting, etc.) and the effects of taxation will be applied to each area.

Credit 4

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 3-quarter 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 presentation, 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.

Credit 4/Qtr (12 total)

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, organization 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-305 Customer Relations Systems
Registration #0205-305
This course provides an introduction to basic concepts of how to develop, implement, and measure processes to improve customer satisfaction. Includes innovative techniques to determine how customer care can be integrated as a standard business practice and how concepts of quality can be applied toward achieving customer care.

Credit 4

CBCE-306 Customer Service Technology
Registration #0205-306
An overview and analysis of technological systems for handling goods and information quickly and cost effectively, to maximize customer satisfaction.

Credit 4

CBCE-353 Management Science
Registration #0205-353
Foundation course which introduces mathematical model-building and the use of management science in the decision-making process. Mathematical techniques will include: linear programming; the assignment model; the transportation model; inventory control models; critical-path models (PERT/CPM); and computer simulation. Homework assignments will include running "canned" computer application programs. (CBCH-201, 202, 351,352 and CBCC-321)

Credit 4

CBCE-298, 398 Special Topics: Management
Registration #0205-298, 398
Special topics are experimental courses offered quarterly. Watch for titles in the course listing each quarter.

Credit Variable

Small Business Management

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

Credit 4

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

Credit 4

CBCE-223 Small Business Marketing
Registration #0205-223 and Planning
Presents various successful planning and marketing approaches (including market determination, distribution and pricing strategies). The regulatory environment facing small business is included along with techniques for planning growth.

Credit 4

Marketing

CBCG-210 Effective Selling
Registration #0207-210
Investigates the importance of the sales function within the overall marketing organization and the necessary general characteristics of a successful salesperson. The various steps of the sales process and the practical applications of effective sales presentation are discussed.

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
Registration #0207-214 and Techniques
Course presents basic approaches used in 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-361 Marketing
Registration #0207-361
An introductory course in marketing designed to provide a better awareness of the function of marketing and how marketing relates to other areas of business. Topics include the marketing concept, developing a product strategy, behavioral aspects of consumer marketing, the marketing mix, segmentation and current marketing issues.

Credit 4

CBCG-362 **Marketing Practices**
Registration #0207-362 **for the Service Economy**
Focuses on applications of traditional marketing concepts and techniques to the service sector (e.g., banking, health care, transportation; and services within organizations), to optimize quality, customer satisfaction, and sales/revenues/profits. Includes a brief review of the increased role of services in the economy.

Credit 2

Mathematics and Statistics for Business

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 real number system, linear, non-linear and exponential functions, and system 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.

NOTE: Entering students who want to register for CBCH-201 are required to take a diagnostic examination to determine the level at which they may start the sequence. Students who have had previous college level mathematics courses should consult with an advisor.

CBCH-351, 352 **Business Statistics**
Registration #0208-351, 352
An introduction to the basic tools of statistical analysis used in business including charts, frequency distribution, averages, dispersion, probability theory, sampling. Logical procedures for making business decisions under conditions of uncertainty are emphasized. Hypothesis testing including, one, two, and k-sample test means, proportions, regression and correlation analysis are also included. (CBCH-202)

Credit 4/Qtr.

Personnel Administration

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-225 **Recruiting, Training and Supervising**
Registration #0209-225 **Service Industry Personnel**
This course examines problems and solutions related to establishing realistic and attractive wages and career paths for employees in service sector businesses. In addition, it explores motivation, training and communication techniques that lead to the kind of quality performance required in service industries and organizations, to optimize customer satisfaction.

Credit 2

CBCI-229 **Personnel Administration**
Registration #0209-229
An introduction to personnel administration including an overview and discussion of employment, equal employment opportunity, job evaluation, training, performance appraisal, compensation, benefits, personnel planning, labor relations, and other related topics.

Credit 4

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 operation are discussed and relationship between various aspects of production are presented.

Credit 4

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

Credit 4

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

Credit 4

Transportation, Logistics and Purchasing Management

CBCL-234 **Introduction to Logistics**
Registration #0212-234 **and Transportation**
Overview of the transportation and logistics industry as a vital part of the nation's social and economic structure. Introduces basic understanding of the functional areas of logistics management and their interrelationships. The purchase and use of transportation services as related to the firm's logistical mission is emphasized. (Formerly titled Traffic and Transportation Management Principles and Practices)

Credit 4

CBCL-239 **Traffic and Transportation**
Registration #0212-239 **Law, Rates, Accounting and Control**
Introduces the role of government in the transportation industry. The evolution of past and current regulatory and promotional policies is explored. The determination and utilization of freight rates are examined. Various methods to forecast and control transportation costs also are discussed. (Formerly titled Traffic and Transportation Rates and Classifications)

Credit 4

CBCL-241 **International Logistics and**
Registration #0212-241 **Transportation**
Introduces the basic skills required to move materials in support of the logistics function internationally. Includes discussions of duties, customs regulations, and the various instruments used to facilitate international trade.

Credit **4**

Real Estate

CBCM-201 **Basic Real Estate Principles**
Registration #0213-201 **Salesperson's Course**
Comprehensive study of real estate principles including: law of agency, human rights and fair housing, real estate instruments, financing, valuation and listings, contracts, license law and ethics, closings, land use regulations, and real estate math. Completion of this course satisfies the NYS educational requirement for a real estate salesperson's license. For licensure, participants must attend all classes and pass the final exam. Individuals interested in licensure only should call 475-5594.

Credit 4

CBCM-202 **Advanced Real Estate Principles**
Registration #0213-202 **Broker's Course**
A study of topics related to real estate including: operation of a broker's office, construction, general business law, subdivision and development, leases, taxes, assessments, investment property, alienation, property management, condominiums and cooperatives, rent regulations, appraisals, and advertising. Completion of this course and Basic Real Estate Principles satisfies the educational requirement for a real estate broker's license. For licensure, participants must attend all classes and pass the final exam. Individuals interested in licensure only should call 475-5594.

Credit 4

CBCM-203 **Real Estate Investment**
Registration #0213-203 **and Finances**
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**
Registration #0213-204
The evaluation of real estate through appraisal and analysis, basic consideration in real estate management, and the advantages of various types of real estate investments are discussed.

Credit 4

Insurance

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 insurance are covered in the class. Emphasis placed on providing students with practical working knowledcde of insurance policies and coverages. The course offers practical insight for both insurance professionals and insurance buyers.

Credit 4/Qtr.

Interdisciplinary Studies

CIDA-220 **Careers and Credits**
Registration #0220-220
This course is designed specifically for adults who want to know more about themselves—their talents and skills—so that they can make informed career choices and realistic educational plans. Using skills interest inventories, class discussion, individualized and group activities, assigned readings and papers, students will be able to assess their individual goals, interests and abilities.

Credit 2

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

CHAC-211 **Intermediate Ceramic Wheel**
Registration #0222-211 **Throwing**
An exploration of Japanese wheel throwing techniques. Students will work with raku stoneware and porcelain, using methods and tools common to Japanese potters. Class projects will concentrate on production techniques with special emphasis being given to glazing and firing procedures. (CHAC-201 or equivalent)

Credit 2

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 glazing formulation, design, production and firing techniques. Kiln design and construction as well as marketing techniques for finished work will be discussed. (CHAC-211 or equivalent)

Credit 2

CHAC-295 **Independent Study: Ceramics**
Registration #0222-295
Independent study may be developed at upper division level. Projects must be developed with 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 Division of Business and the Arts.

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. (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. (CHAF-201, 202, 203; CHAD-201, 202, 203 or equivalent)

Credit 2/Qtr.

CHAD-218 **Introduction to Designing**
Registration #0223-218 **Home Interiors**
Basic principles of interior design. Processes used by both professionals and informed amateurs: gathering information about clients and their needs, activities and preferences; assembling product and color samples and information; measuring spaces and furnishings; arriving at the best interior plans for clients. (Credits may be applied to Interior Design diploma program)

Credit 2

CHAD-220 **Art for Reproduction**
Registration #0223-220
This course prepares students to enter the field of graphic design by providing orientation and the studio experience in the presentation of imagery for reproduction. Presentations will include board techniques, materials, tools, mechanical art procedures, printing and bindery processes, etc. (CHAD-201, 202, 203 or equivalent)

Credit 3

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. (CHAF-201, 202, 203; CHAD-201, 202, 203 or equivalents)

Credit 2/Qtr.

CHAD-226 **History of Interior Design**
Registration #0223-226
Historical survey of period decoration and furniture styles from antiquity to the present.

Credit 2

CHAD-227 **Business Aspects of**
Registration #0223-227 **Environmental Design**
This course will introduce students to the various occupations available to the environmental and interior designer, and instruct them in the use of their artistic and technical skills to obtain employment and establish themselves in the design community. Dealing with clients, vendors, and contractors will also be covered. Assignments will be structured to meet the personal business needs of each student.

Credit 2

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 on the visual impact of color. (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. **(CHAD-224, 225** or equivalent)

Credit 4

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. (CHAF-201, 202, 203 and CHAD-201, 202, 203 or equivalent experience)

Credit 2/Qtr.

CHAD-261, 262, 263 **Advanced Design and**
Registration #0223-261, 262, 263 **Typography**
Study of commercial layout procedures from rough layouts to comprehensives, type selection, copy fitting, pictorial 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. (CHAF-201, 202, 203 and CHAD-201, 202, 203) (Formerly titled Lettering and Layout)

Credit 2/Qtr.

CHAD-270 **Graphic Communication**
Registration #0223-270 **for the Non-Artist I**
Introduces basic skills in communication graphics, including: elements of design (line, shape, texture, color, space) and their application to two-dimensional projects; typography and commercial layout procedures (from rough layouts to comprehensives); and rendering techniques (marker sketching, shadowing, and perspective). Course is designed for people with little or no previous art training. Lecture/demonstration and studio format; student projects followed by critiques.

Credit 3

CHAD-271 **Graphic Communication**
Registration #0223-271 **for the Non-Artist II**
An exploration of current approaches to solving graphic design problems in the communications professions applying basic skills in design, lettering and layout, and rendering, with emphasis on the use and selection of art materials, photographs, and photographic/electronic image producing equipment; and an exploration of design in the advertising process, involving planning, creating, producing, and evaluating media. (CHAD-270 or equivalent)

Credit 3

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 of 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. (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 functions and skills of the art director touch on all phases of advertising art from concepts and professional studio procedures to practical approaches in design and production. (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-360 **Portfolio Workshop**
Registration #0223-360
A workshop designed to help students take what they have learned in art classes (or 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 a concise, positive and beneficial manner. Visits from prominent people in the field showing their work and sharing their experiences.

Credit 2

CHAD-295 **Independent Study: Design**
Registration #0223-295
Independent studies may develop at the upper division level. Projects must be developed with instructor, subject to approval of the program chairperson or the Division of Business and the Arts. Credit may vary from one to five quarter-credits. For information on independent study contact the Division of Business and the Arts.

Credit Variable

CHAD-298, 398 **Special Topics: Design**
Registration #0223-298, 398
Special Topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

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-207 **Basic Figure Drawing**
Registration #0224-207
Drawing from the costumed and nude model. The student makes a visual analysis of action, 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. (CHAF-201, 202, 203 or equivalent)

Credit 2

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. (CHAF-201, 202, 203; CHAD-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. (CHAF-207 or equivalent)

Credit 2

CHAF-210 **Interpretive Landscape**
Registration #0224-210 **Drawing**
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 still-life and nature forms. Basic training and foundation for advanced work. (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 media, seek new skills, 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. (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. (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. (CHAF-207 and CHAF-211 or equivalents)

Credit 2

CHAF-341 **Watercolor Painting**
Registration #0224-341
Basic study of watercolor media, methods, and techniques. Students receive 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. (CHAF-201, 202, 203 or equivalents)

Credit 2

Sculpture

CHAF-247 **Sculpture**
Registration #0224-247
Study of 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. (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. (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 graphics procedures. May be elected more than once for credit. (CHAF-207 or equivalent)

CHAF-362 Airbrush Techniques
Registration #0224-362
This course is designed to provide an opportunity for beginners to develop the basic skills and techniques of painting with an airbrush and allow experienced users to enhance their skills. Graphic artists, fine artist, illustrators, and photographers can benefit from this exposure to airbrush techniques and applications through demonstration and experiential learning. Class will be limited to 10 students. (0223-201, 202, 203, and 0224-201, 202, 203 or equivalent)

Credit 3

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. (CHAF-263 or equivalent)

Credit 2

Printmaking

CHAF-296 Introduction to Printmaking
Registration #0224-296
An introduction to the methods, materials, tools, and techniques of printmaking. Areas covered may include woodcut, etching, engraving, stencil, collographs, and lithography. Students are required to pull an edition of print in one area. Additional fee required for supplies. (CHAF-201, 202, 203, and CHAD-201, 202, 203 or equivalents)

Credit 2

CHAF-397 Printmaking Workshop
Registration #0224-397
Further study of methods and techniques of etching, lithography and relief printing. Students may concentrate in one print medium. May be elected more than once for credit. Additional fee required for supplies. (CHAF-296)

Credit 2

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

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 Variable

Metalcrafts and Jewelry

CHAM-201 Introduction to Metalcrafts
Registration #0225-201 and Jewelry
Emphasis will be placed 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 and
Registration #0225-211 Jewelry
Work of a more complex nature will be introduced. Some techniques included will be surface treatment of metal, more sophisticated stone setting, basic hollowware, 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. (6 credits CHAM-201 or presentation of portfolio)

Credit 2

CHAM-301 Advanced Metalcrafts and
Registration #0225-301 Jewelry
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. (Presentation of portfolio)

Credit 2

CHAM-295 Independent Study:
Registration #0225-295 Metalcrafts/Jewelry
Independent studies may be developed at the upper division level. Project must be developed with instructor, subject to approval of the program chairperson or the Division of Business and the Arts. Credit may vary from one to five quarter-credits. For information on independent studies contact the Division of Business and the Arts.

Credit Variable

CHAM-298 Special Topics: Metalcrafts
Registration #0225-298 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, warping 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. (6 credits CHAT-201 or presentation of portfolio)

Credit 2

I

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 the class and outside assignments schedules. May be elected more than once for credit. (Presentation of portfolio)

Credit 2

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

Credit Variable

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

Credit Variable

Woodworking

CHAW-201 **Introduction to Woodworking**
Registration #0227-201
Elementary problems in choice of woods, joinery, finishing, 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 flovetails. 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 powered 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.

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 methods 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. (Presentation of portfolio)

Credit 2

CHAW-295 **Independent Study:**
Registration #0227-295 **Woodworking**
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 Division of Business and the Arts.

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

International Studies

CHGI-211 **Chinese Language and Culture:**
Registration #0233-211 **China and the Chinese People**
Introduces basic Chinese culture as well as 100 daily conversational sentences. The emphasis in this quarter will be on Chinese culture 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: Chinese**
Registration #0233-212 **Communism Ideology and Practice**
Continues an introduction to basic 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 developments and conflicts.

Credit 4

CHGI-213 **Chinese Language and**
Registration #0233-213 **Culture: Contemporary Issues**
Continues an introduction to Chinese culture as well as 100 daily conversational sentences. This quarter's emphasis is on 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 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 1500s to its present position as a leading economic power. This course may serve as a social science elective.

Credit 4

Deaf Studies

CHGD-211 **Sign Language & Manual**
Registration #0234-211 **Communications System I**
Develops fluency at a basic level. This 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 System II**
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. (CHGD-211 or equivalent sign skill)

Credit 2

CHGD-213 **Sign Language & Manual**
Registration #0234-213 **Communications System III**
The third in a series of basic conversational sign language courses. 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. (CHGD-212 or equivalent sign skill)

Credit 3

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. (CHGD-213 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. Culture aspects of the deaf community are considered as they relate to the language of deaf people. (CHGD-311 or equivalent sign skill)

Credit 2

CHGD-241 Aspects & Issues of Deafness I
Registration #0234-241
Develops 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 Deafness II
Registration #0234-242
Examines deafness from a cultural perspective, focusing on: what constitutes culture, what characterizes deaf culture, dynamics of interaction between the deaf 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 Humanities
Registration #0235-201
An interdisciplinary course in which literature, architecture, art, music and philosophy are related to selected historical, economic and scientific forces that have shaped western civilization. Part of a three-course sequence, this course is concerned with the modern period, from the end of the Romantic Age to the present day. Despite the relatedness of these three courses, any of them can be taken alone, and no one course is prerequisite to either of the others.

Credit 4

CHGH-202 Humanities
Registration #0235-202
An interdisciplinary course in which literature, architecture, art, music and philosophy are related to selected historical, economic and scientific forces that have shaped (particularly) western civilization. Part of a three-course sequence, this course focuses on ancient Greece, Rome and Israel, as well as the Middle Ages. This course has no prerequisites, nor does it serve as prerequisite for other courses.

Credit 4

CHGH-203 Humanities
Registration #0235-203
An interdisciplinary course in which literature, architecture, art, music and philosophy are related to selected historical, economic and scientific forces that have shaped (particularly) western civilization. Part of a three-course sequence, this course focuses on the development of the humanities from the Renaissance through the Romantic Age. This course has no prerequisite, nor does it serve as prerequisite for other courses.

Credit 4

CHGH-210 Introduction to Art
Registration #0235-210 Appreciation
Examines the elements involved in the creation of the visual arts (painting, sculpture, architecture) and the factors that affect audience response (line, color, texture, rhythm). Particular emphasis given to historical perspectives and organic unity.

Credit 4

CHGH-230 Introduction to Music
Registration #0235-230 Appreciation
A study of the elements of music (rhythm, melody, harmony), of different musical styles, and of music in the context of history. Emphasized topics include major musical periods (Rococo, Baroque, Classical, Romantic and Modern). Major composers considered are: Bach, Vivaldi, Handel, Mozart, Haydn, Beethoven, Brahms, Chopin, Tchaikovsky, Liszt, Dvorak, Stravinsky and Copeland.

Credit 4

CHGH-260 Introduction to Literature
Registration #0235-260
An introduction to the elements and distinctive qualities of five varieties of literary experience: poetry, short fiction, film, the novel, and briefly, expository prose. Emphasized topics include form, theme, style, versification, and characterization. Although this course is not historically oriented, students will become familiar with cultures from many periods in history.

Credit 4

CHGH-270 Introduction to Philosophy
Registration #0235-270
This course acquaints students with methods of philosophical questioning and argumentation through an examination of major philosophers and the issues they address. Issues to be examined include questions about the nature of knowledge, the nature of reality, ethics, and aesthetics. Emphasis will be placed on a critical examination of the reasoning offered by philosophers in behalf of their views.

Credit 4

CHGH-275 Contemporary Moral Problems
Registration #0235-275
A one-quarter course that presents moral issues which arise in the professions and other vocations of technical expertise. These problems in applied ethics are studied through contemporary literature by moral philosophers (e.g., Habermas, Singer) as well as key classical texts (e.g., those of Plato, Locke, Hume, etc.).

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-323 **Modern Europe**
Registration #0235-323
An examination of the development of Europe from the 17th Century to the present time, with emphasis on theories and concepts of civilization, culture, government, and international relations. Also emphasized: the Industrial Revolution, 19th Century democracies, governmental experiments of the 20th Century, World Wars I and II, and the Post (WWII) War Period.

Credit 4

CHGH-326 **Modern America**
Registration #0235-326
Traces the emergence of the U.S. as a world power from the time of the Civil War to the present. Stresses problems created at home by continued industrialization and urbanization. Included are such issues as urbanization, civil rights, and the growing political influence of women and minorities.

Credit 4

CHGH-340 **Values and Experience**
Registration #0235-340
A study of the interaction between values and experience. Focuses on the impact of social institutions (religion, family, education, government) and technological developments on values and beliefs (including the definition of reality). This is a science, technology and humanities elective.

Credit 4

CHGH-341 **Symbols, Behavior, Culture**
Registration #0235-341 **and Technology**
A study of symbol and sign systems, emphasizing principles and rules that underlie linguistic behavior. Examines the ways in which behavior reflects and influences culture, and the ways in which miscommunication results from technical, behavioral and cultural factors. This is a science, technology and humanities elective.

Credit 4

CHGH-342 **Dimensions of Science**
Registration #0235-342
A survey and exploration of the impact of science on, and its interactions with, other elements of civilization, such as literature, technology, politics, philosophy, the arts, and human values. This is a science, technology and humanities elective.

Credit 4

Communications

NOTE: Students who apply for Dynamic Communications I, CHGL-204, or Communications, CHGL-220 must take a pre-test to determine the course most appropriate for their communication needs. Only students who have credit for CHGL-204, or equivalent, may register for Dynamic Communications II, CHGL-205.

CHGL-120 **Basic Communication**
Registration #0236-120
This course provides an opportunity for students to improve their reading, writing, listening skills. For college-prep students or adults who want to upgrade their communication skills.

Credit 1 (Diploma)

CHGL-204 **Dynamic Communications I**
Registration #0236-204
The first of a two-course sequence, Dynamic Communications I focuses on writing skills. The achievement of clarity, logic, coherence, logical development of ideas, and effective use of language is emphasized. Basic research techniques and critical reading skills are also included. (Requires pre-test)

Credit 4

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. (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-220 **Communications**
Registration #0236-220
This course consolidates the objectives and content of Dynamic Communications I, CHGL-204, and Dynamic Communications II, CHGL-205. (Requires pre test)

Credit 4

CHGL-301 **Professional Presentations**
Registration #0236-301
This course focuses on the principles of preparing and delivering oral presentations. Students will deliver a variety of speech types representative of those commonly occurring in business, industrial, community, and social settings. Self, peer, and instructor critiquing will be used for evaluation of in-class, tape-recorded, and TV-monitored speeches.

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 **Communicating in Business**
Registration #0236-307
This course focuses on the development of those communication skills essential to functioning effectively in the business world. Students will learn the process of analyzing communication situations and responding to them appropriately. Topics include reports, memos, letters, oral presentations, and interpersonal skills. (CHGL-204 and 205 or equivalent)

Credit 4

CHGL-308 **Technical Report Writing**
Registration #0236-308
Students 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. (CHGL-204, 205 or equivalent)

Credit 4

CHGL-323 Technical Writing and Editing
Registration #0236-323
This course focuses on the writing skills required for preparing technical documents. Adapting material and language for audience and purpose, and conventions of technical writing style are emphasized. Strategies for evaluating technical discourse are studied and applied Prior to enrolling in this course, students must demonstrate command of standard written English prose.

Credit 4

CHGL-324 Research Techniques
Registration #0236-324
This course focuses on techniques for information generation. Interviewing skills, review and use of literature, and task analysis are included.

Credit 2

CHGL-325 Instructional Design
Registration #0236-325 Principles
An introduction to the process of designing instructional packages from need and task analysis through identifying goals and objectives, media selection, program development, and validation testing.

Credit 2

CHGL-326 Document Design
Registration #0236-326
An overview of the principles and techniques involved in document design. Includes basic principles of graphic design and visual communication, use of computer graphics, and introduction to typography and reproduction methods.

Credit 2

CHGL-327 Practicum: Designing Manuals
Registration #0236-327
With supervision, students will apply general principles of technical communication to the process of planning, researching, writing, editing, formatting, and producing a finished manual.

Credit 2

CHGL-328 Writing in the Sciences
Registration #0236-328
This course reviews current conventions used in presenting the results of scientific investigation in reports and journal articles. The elements of a scientific manuscript embodying technical content, organization, style, validity, and significance will be discussed and put into practice.

Credit 2

CHGL-329 Oral Communication Skills
Registration #0236-329
This course focuses on effective techniques for oral presentation of technical material, and participation, both as leader and member, in formal and informal meetings.

Credit 2

CHGL-330 Communicating Online
Registration #0236-330
Reviews recent research in online communication, presents principles for online writing and screen design, and examines systems for storage and retrieval of online information.

Credit 2

CHGL-331 Promotional Writing
Registration #0236-331
This course focuses on practical guidelines for preparing marketing materials including brochures, data sheets, trade press articles, press kits, and newsletters.

Credit 2

CHGL-332 Managing the Project
Registration #0236-332
Principles of project management are studied and applied in cases and examples taken from the fields of technical and marketing communication. Major topics include planning, organizing, scheduling, budgeting, controlling, monitoring, and reporting. Conflict resolution, team building, and motivation are also covered.

Credit 2

CHGL-333 Audiovisual Presentations
Registration #0236-333
This course introduces a variety of ways to visualize information for presentation to audiences. Students will learn how to match the media to the message and the audience, how to prepare simple materials quickly, and how to work with production units for more sophisticated visuals. From flip charts to video, visualizing information will be studied and practiced.

Credit 2

CHGL-298, 398 Special Topics:
Registration #0236-298, 398 Communications
Special Topics are experimental courses announced quarterly. Watch for titles in the course listing each quarter.

Credit Variable

CHGL-340 Interpersonal Communication
Registration #0236-340 for Customer Service
This course examines key dimensions of interpersonal communication, focusing on effective message styles and listening strategies to improve customer satisfaction. Techniques and actions that lead to positive outcomes such as conflict resolution, problem solving, and goal attainment are stressed. The role and importance of interpersonal skills in customer interactions and organizational policy, management and ethical issues are reviewed. Through simulation and role playing, skills are developed that may be applied to a variety of work, social and other situations.

Credit 4

CHGL-360 Introduction to Public
Registration #0236-360 Relations
An overview of the public relations function, covering tasks, responsibilities and roles of the PR practitioner as researcher, image-developer, designer, editor, coordinator, marketer and advertiser; as advisor to management; and as spokesperson, media manager, and services purchaser and provider. Course may be counted as either a business or communication elective. (Consult advisor)

Credit 2

CHGL-365 Writing for the
Registration #0236-365 Organization I
Course is designed for non-professional writers whose positions frequently require preparation of correspondence as well as copy for inbound and outbound company publications. Emphasis will be on developing clarity, precise use of language, and style in writing letters, reporting information, and creating feature articles. (Comm-220 or equivalent)

Credit 2

CHGL-366 Writing for the
Registration #0236-366 Organization II
Introduction to writing at the corporate level, including handling crisis communication, covering meetings, adapting interviews for print, and preparing company statements for various media. Techniques are outlined for creating interest, presenting financial information, and quoting. Emphasis will be on producing clear, correct copy that is appropriate for purpose and audience. (Comm-220 or equivalent; CHGL-365 recommended)

Credit 2

CHGL-367 **Scripting and Speechwriting**
Registration #0236-367
Introduces principles for two specialized forms of writing: speechwriting and scripting. Speechwriting covers techniques for preparing speech in the "voice" of another: adapting message, wording, and tone to speaker. Scripting covers story boarding, using basic script formats, and enhancing the message, where appropriate, with dimensions of characterization, sound, and color. (Comm-220 or equivalent)

Credit 4

Social Sciences

CHGS-20I **Anthropology: Introduction**
Registration #0237-201
Examines the similarities and differences among cultures. The course focuses particularly on the influences of environment, technology, work, authority, kin and non-kin groups, enculturation, religion, folklore, and art in different societies.

Credit 4

CHGS-211 **Psychology: Introduction**
Registration #0237-211
How people think, feel and interact with others comprises the central content of this course. Students learn how scientific method is used to discover some of the factors involved in sensation, perception, motivation, emotion, stress and learning. Given particular attention are: physical and personality development, psychological disorders, and social behavior. Students are encouraged to relate this information to their personal and professional 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-223 **Principles of Economics III**
Registration #0237-223
A further elaboration of the elementary principles of economic analysis introduced in Principles of Economics I (macroeconomics) and II (microeconomics). Particular emphasis will be placed on the application of these principles to the decision-making process of business and industry, domestically and internationally. (CHGS-221 or CHGS-222)

Credit 4

CHGS-227 **The New Service Economy**
Registration #0237-227
Provides an overview of the emerging national and regional service economies. Defines the service sector, both consumer and producer services, using a variety of local examples drawn from health care, information and communication, hospitality, financial and personnel services. Economic and labor force implications of the service economy are analyzed along with the structure of service organizations, service delivery systems and levels of service.

Credit 2

CHGS-231 **Sociology: Introduction**
Registration #0237-231
A scientific examination of 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 condition in the context of social relationships, dispel myths and prejudices, and ascertain practical applications of concepts.

Credit 4

CHGS-261 **Political Science: Introduction**
Registration #0237-261
Introduces the discipline of political science. It is designed to acquaint students with the complexities of political issues, political thought and behavior, government structures and processes, public policy, and international affairs.

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. Topics to be covered are motivation, performance, assessment, quality of work life, group behavior, leadership, organizational structure, communication and decision making. (CHGS-211)

Credit 4

CHGS-317 **Psychology of Stress and Adjustment**
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 basic concepts, the positive and negative ramifications of stress, and strategies for stress management. (CHGS-211 or equivalent)

Credit 4

CHGS-320 **Psychology of Persuasion**
Registration #0237-320
Examines important research on persuasive communication, covering: What causes people to respond to persuasive communication in different ways? How can the communicator predict group responses to a given persuasive message? Projects will require students to use theory in designing effective strategies for various purposes and audiences.

Credit 2

Photography

NOTE: Students enrolled in photographic courses have the studies 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.

CHGP-021 Introduction to Photography
Registration #0231-021
For the novice photographer who would like to learn how to produce aesthetically and technically acceptable photographs. Topics include cameras, lenses, films, developing, printing, enlarging, filters, flash photography and print finishing. The emphasis is on successful solution of practical photographic problems.

Credit 0

CHGP-101 Photography Workshop
Registration #0231-101
A flexible course in the application of photography for self-expression. Emphasis is on criticism and the development of the individual's ability to create meaningful and purposeful photographs. Class time devoted to developing and enlarging, as well as group and individual critique sessions. All shooting assignments are completed outside of class.

Credit 2

CHGP-102 Photography Workshop
Registration #0231-102
Continuation of CHGP-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

CHGP-104 Color Photography Workshop
Registration #0231-104
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 the past work to first class. May be elected more than once for credit. (CHGP-102 or equivalent)

Credit 2

CHGP-201, 202, 203 Basic Professional
Registration #0231-201, 202, 203 Photography
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/Qtr.

CHGP-211, 212, 213 Color Photography
Registration #0231-211, 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. (CHGP-201, 202, 203 or equivalent)
Credit 4/Qtr.

CHGP-221, 222, 223 Illustrative Photography
Registration #0231-221, 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 life, food and consumable products, fashion assignments and some location photography. The principal camera format used will be 4x5. Equipment is available at the studios for use during class hours. Some small format photography will also be required. (CHGP-201, 202, 203 or equivalent)

Credit 3/Qtr.

CHGP-231, 232, 233 Portrait Photography
Registration #0231-231, 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 CHGP-331,332,333. (CHGP-201,202,203 or equivalent)

Credit 3/Qtr.

CHGP-241, 242, 243 Commercial Photography
Registration #0231-241, 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 Commerical Retouching, CHGP-321, 323. (CHGP-201, 202, 203 or equivalent)

Credit 3/Qtr.

CHGP-301,302 Motion Picture Photography
Registration #0231-301, 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/Qtr.

CHGP-321,322, 323 Commercial Retouching
Registration #0231-321, 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/Qtr.

CHGP-331, 332, 333 Portrait Retouching
Registration #0231-331, 332, 333
Retouching portrait negatives, using pencil, knife, abrasives and dyes. Last quarter includes Ektacolor negatives and major correction of anatomical features.

Credit 1/Qtr.

CHGP-351 Industrial Photography:
Registration #0231-351 Instrumentation
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, shadow graph 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. (CHGP-201, 202, 203 or equivalent)

Credit 3

CHGP-352 **Industrial Photography:**
Registration #0231-352 **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. (CHGP-201, 202, 203 or equivalent)

Credit 3

CHGP-353 **Industrial Photography:**
Registration #0231-353 **Special Topics**
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 course may be scheduled with the consent of individual faculty members. For listing of special topics available any particular quarter consult department chairperson. May be elected more than once for credit. (CHGP-201, 202, 203 or equivalent)

Credit 3

CHGP-361, 362 **Law Enforcement**
Registration #0231-361, 362 **Photography**
Advanced photographic applications in various aspects of law enforcement photography. Fingerprints, infrared and ultraviolet photography. Forgery, surveillance and accident photography. (CHGP-201, 202, 203 or equivalent)

Credit 3/Qtr.

CHGP-366 **Dye Transfer Printing**
Registration #0231-366
The dye transfer color printing process is covered in its theory and through practical laboratory assignments. Mordant, dye acidity and contrast, color balance controls, dyeing, image transfer and registration. (CHGP-211, 212, 213 or equivalent)

Credit 3

CHGP-401, 402, 403 **Fashion Photography**
Registration #0231-401, 402,403
A course designed to expand the photographer's vision and awareness to the problems of fashion photography. Emphasis 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. (CHGP-201, 202, 203 or equivalent)

Credit 3/Qtr.

CHGP-404,405,406 **Architectural Photography**
Registration #0231-404, 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 group buildings. Students must make arrangements for printing outside of class.

Credit 3/Qtr.

CHGP-411 **Photography of the**
Registration #0231-411 **Natural World**
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 (CHGP-201, 202, 203 or equivalent)

Credit 4

CHGP-431, 432, 433 **Photographic Communication**
Registration #0231-431, 432, 433
Photography for people in action 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 and printing portion of the assignments to be completed outside of class time.

Credit 2/Qtr.

CHGP-295, 298 **Photographic Vision I and H**
Registration #0231-295, 298
The Photographic Vision is a video-based two course sequence all about photography, presented in a medium that enhances the power of the photograph. The course covers the basic mechanical skills of camera handling, the nomenclature of the tools and materials, the history of photography, and the technical, artistic and commercial dimensions of this craft. Photography is approached as an art form and as unique means of human communication as well as a technical skill. Students desiring darkroom experience should also register for a Photography Workshop: CHGP-101 or 102. Completion of CHGP-295 and 298, CHGP-101, 102 along with four credits of Photography electives, will satisfy the requirements of Basic Professional Photography: CHGP-201, 202 and 203.

Credit 3/Qtr.

Photographic Science

CHGR-207, 208, 209 **Fundamentals of**
Registration #0238-207, 208, 209 **Photographic 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. (A background in algebra and trigonometry is suggested)

Credit 4/Qtr.

CHGR-217, 218, 219 (Lec.) **Photographic Chemistry**
CHGR-224, 225, 226 (Lab)
Registration #0238-217, 218,
219, 224, 225, 226
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 and application of conventional and diffusion transfer processing; comparisons and 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. The lecture may be taken by itself. (CHGR-201, 202 and 203 and CHGR-207, 208 or equivalent)

Credit 4/Qtr,, Lec. 3, Lab 1

CHGR-227, 228, 229 **Black and White Sensitometry**
Registration #0238-227, 228, 229
The relation of photographic density to exposure in a light-sensitive silver halide emulsion, including radiation source, exposure measuring devices, sensitometers, chemical development and processing, D-Log curves, densitometers, tone reproduction, and the necessary latent image theory. (CHGP-207, 208, 209 and CTAM-210 or equivalent)

Credit 2/Qtr.

CHGR-237,238 **Radiometry**
Registration #0238-237, 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 relates to photographic materials and fundamental optical systems.

A background in algebra and trigonometry is recommended. (CHGP-207 and CTAM-210 or equivalent)

Credit 3/Qtr.

CHGR-307 **Quality Control of**
Registration #0238-307 **Photographic 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 compatibility. Specific examples of use in present day machines. (CHGR-217, 218, 219 or equivalent)

Credit 3/Qtr.

CHGR-407, 408,409 **Optics**
Registration #0238-407, 408, 409
Introduction to geometrical and physical opticals applied to photographic systems and optical instruments. (CTAM-251, 252 or equivalents)

Credit 3/Qtr.

CHGR-414,415,416 **Color Sensitometry**
Registration #0238-414, 415,416
Photometric measurements, color specification, spectrophotometry, visual and printing densities, integral and analytical color densitometry, color reproduction, dye deficiencies and masking. (CHGR-227, 228, 229 and CTAM-251, 252, 253 or equivalents. Computer programming background also required)

Credit 3 (CHGR-414,415), Credit 4 (CHGR-416)

CHGR-417,418,419 **Image Evaluation**
Registration #0238-417, 418, 419
The course objective is to develop fundamental and rigorous understanding of the problems of evaluating photo-opticals 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-dimension image formation and convolution integrals; Fourier analysis and Fourier transforms; auto-correlation and its applications; modulation transfer function of photo-optical systems (MTF). (CHGR-407, 408, 409 and CTAM-305, 328 or equivalent. Computer programming background also required)

Credit 3/Qtr.

CHGR-421 **Mathematical Methods in**
Registration #0238-421 **Photographic Science**
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. (CTAM-251, 252, 253 or equivalents)

Credit 2 Credit 2/Qtr.

CHGR-520 **Xerography and**
Registration #0238-520 **Electrographics**
The objectives of this course, which is directed towards working engineers, scientists and experienced technicians, are to provide a comprehensive program devoted to the scientific background and practical applications of electro-photography, 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

CHGR-527 **Theory of the Photographic**
Registration #0238-527 **Process**
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. (CHGR-217, 218, 219 and 224, 225, 226 or equivalent)

Credit 4

CHGR-528 **Theory of the Color Process**
Registration #0238-528
The measurements of color photography, colorimetry, tone and color reproduction, spectrophotometry, and masking theory are treated in a common mathematical notation. (CHGR-217, 218, 219 and 224, 225, 226 and CHGR-414, 415, 416 or equivalent)

Credit 4

CHGR-529 **Non-Silver Imaging Systems**
Registration #0238-529"
The purpose of the course is to examine the more promising nonsilver 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 principle 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. (CHGR-527 or equivalent)
Credit 4

CHGR-557, 558, 559 **Independent Research**
Registration #0238-557, 558, 559
Individual project involving research in an applied professional or scientific photographic subject carried out under the guidance of a professor. (Permission of chairperson, photography)

Credit 3/Qtr.

Printing

CHGT-l11,112,113 Color Separation
Registration #0239-111, 112, 113 Camerawork
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. (CHGT-l01, 102, 103 or equivalent)

Credit 2/Qtr.

CHGT-121, 122, 123 Offset Layout and Stripping
Registration #0239-121, 122, 123
No longer offered. See course CHGT-221, 222, 223.

CHGT-131, 132 Offset Platemaking
Registration #0239-131, 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 also are studied.

Credit 2/Qtr.

CHGT-141, 142,143 Offset Presswo k
Registration #0239-141, 142,143
A study of the fundamentals of lithographic presswork. Emphasis is placed on principles, procedures, equipment and the relationship of materials.

Credit 2/Qtr.

CHGT-151, 152, 153 Color Stripping
Registration #0239-151, 152, 153
An advanced study of image assembly to include 4 color process stripping; pin register systems; proofing systems; contacting procedures. (Students should have taken CHGT-121,122,123, CHGT-221, 222, 223 or equivalent experience)

Credit 2/Qtr.

CHGT-201, 202, 203 Introduction to Printing
Registration #0239-201, 202, 203
Survey of the various phases of production employed in major printing processes, encompassing the major steps from design to finished printed product.

Credit 2/Qtr.

CHGT-207 Printing Design and Layout
Registration #0239-207
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

CHGT-211 Phototypesetting Procedures
Registration #0239-211
Study and analysis of phototypesetting procedures, emphasizing techniques of phototypography through the medium of contemporary laboratory facilities. One field trip.

Credit 2

CHGT-215 Bookbinding
Registration #0239-215
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 bookbinding and restoration. Students should bring two books of their own for rebinding.

Credit 2

CHGT-219 Estimating
Registration #0239-219
A basic course in planning production, cost of materials, hour costs, hour rates, estimating time and time standards.

Credit **4**

CHGT-221, 222, 223 Offset Film Assembly
Registration #0239-221, 222, 223
A comprehensive course sequence of applied study in offset film assembly to include: imposition planning and layout; black and white, flat color, and process color film assembly techniques; pin register systems; proofing systems; roomlight film contacting procedures. Lab projects are designed to include a wide variety of film assembly techniques and emphasize the development of job analysis, planning and construction skills.

Credit 3/Qtr.

CHGT-227 Copy Preparation
Registration #0239-227
Copy preparation for reproduction; working from layouts; arrangement and handlings for paste-up, separation mechanicals, and photographic copy; requirements of reproduction proofs; writing complete specifications for stripping and camera.

Credit 3

CHGT-231, 232 Printing Plates
Registration #0239-231, 232
Theory and practice of platemaking for lithographic, letter press and flexographic printing plus theory of gravure cylinder making.

Credit 2/Qtr.

CHGT-237 Technology of Typesetting
Registration #0239-237
An introduction to machine typesetting including hot metal, tape and phototypesetting.

Credit 2

CHGT-241 Typography
Registration #0239-241
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

CHGT-251,252 PaperandPrinting
Registration #0239-251, 252
A survey of kinds of paper and papermaking emphasizing the graphic arts processes and their relation to varieties of paper; instruction in utilizing paper characteristic for printing advantage. Attention given to the economics of paper buying, the problems of the pressroom, and the paper revolution.

Credit 2

CHGT-301, 302,303 Reproduction Camerawork
Registration #0239-301, 302, 303
The photographic process as it relates to the printing of black and white and 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/Qtr.

CHGT-314 Flexography
Registration #0239-314
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 2

CHGT-317,318 **Computer Applications**
Registration #0239-317, 318 **in Printing**
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 introduction to programming concepts.

Credit 2/Qtr.

CHGT-341 **Printing Processes**
Registration #(9239-341 **Introduction to Offset Press**
A basic introduction to offset presses. Covering: lithographic theory, the applications of lithography, capabilities and limitations of process and basic press design and function. The material will be presented in the form of lectures and demonstrations. (CHGT-203)

Credit 2

CHGT-407 **Ink and Color**
Registration #0239-407
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

CHGT-421 **Imposition and Finishing**
Registration #0239-421
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 book.

Credit 2

Science and Technology

Mathematics

NOTE: Entering students who apply for any of the beginning mathematics courses, CTAM-201, 210 or 251, are required to take a diagnostic examination to determine the level at which they may start the mathematics sequence. Students who have had previous college level mathematics courses should consult with an advisor.

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. (CTAM-103 or equivalent)

Credit 4/Qtr.

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. (CTAM-202 or equivalent)

Credit 4

CTAM-205 **Mathematical Thought**
Registration #0240-205 **and Processes**
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**
Registration #0240-210 **and Trigonometry**
A precalculus course covering a study of algebraic and transcendental (trigonometric, logarithmic, and exponential) functions including graphs and equations. (Three years of high school mathematics or equivalent including intermediate algebra)

Credit 4

CTAM-251 **Calculus**
Registration #0240-251
Topics include limits, derivatives of algebraic and trigonometric functions; continuity; differentials; related rates; curve sketching, maxima and minima problems; indeterminate forms. (CTAM-210 or equivalent)

Credit 4

CTAM-252 **Calculus**
Registration #0240-252
Topics include the indefinite integral; the definite integral; applications; differentiation and integration of transcendental functions. (CTAM-251 or equivalent)

Credit 4

CTAM-253 **Calculus**
Registration #0240-253
Topics include methods of integration; plane analytic geometry; polar coordinates; vector algebra with emphasis on applications; sequences and series. (CTAM-252 or equivalent)

Credit 4

CTAM-265 **Discrete Mathematics I**
Registration #0240-265
An introduction to discrete mathematics with applications in computer science and mathematics, with an emphasis on proof techniques. It covers the basics of combinatorics, sets, functions, the natural numbers, and the integers modulon. (CTAM-201, 202 or equivalent)

Credit 4

CTAM-266 **Discrete Mathematics II**
Registration #0240-266
A continuation of discrete mathematics with applications in computer science and operations research. It covers finite state machines, relations, graphs, trees, optimization and matching. (CTAM-265)

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. (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, LaPIace Transforms. (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, and introduction to partial differential equations; series solutions of differential equations; applications of the material covered. (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. (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. (CTAM-305 or equivalent)

Credit 4/Qtr.

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. (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. (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. (CTAM-305 or equivalent)

Credit 4

Electrical (Applied Science)

CTBE-401, 402,403 (Lec.) **Circuit Analysis**
CTBE-406, 407, 408 (Lab)
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, polyphrase circuits, complex frequency, pole-zero diagrams, resonance, magnetically coupled circuits, two-port theory. Fourier series analysis of circuits. LaPIace transform techniques of circuit solution. (CTCP-303 and CTAM-305 or concurrent with CTAM-306)

Lec. 3, Lab 1, Credit 4/Qtr.

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. (CTAM-328 and CTBM-342 or equivalent)

Credit 4/Qtr.

CTBE-421, 422, 423 **Electronics**
Registration #0241-421, 422, 423
An integrated treatment of basic electronic devices and their circuits with emphasis on active circuits and their analysis; biasing, stability, and frequency response consideration, feedback amplifiers and nonlinear circuits. (CTBE-403 and 408 or equivalent)

Credit 4/Qtr.

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. (CTBE-423 or equivalent)

Credit 4/Qtr.

CTBE-433 **Electronics**
Registration #0241-433 **(Communications)**
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, band-width, sampling theory, and noise sources with their effects on information transmission. (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 Karnaugh 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. (CTBE-423 or equivalent)

Credit 2 Credit 2/Qtr.

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. (CTAM-305 and CTCP-303 or equivalent)

Credit 4/Qtr.

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. (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. (CTBE-501 and CTBE-403 and 408, CTBE-511, or equivalent)

Credit 4/Qtr.

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. (CTCP-302 and CTAM-305)

Credit 4/Qtr.

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. (CTBM-341 or equivalent)

Lec. 3, Lab 1, Credit 4

CTBM-345 **Strength of Materials n**
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. (CTBM-344 and 354)

Credit 4

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. (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. (CTBM-401 or equivalent)

Credit 4

CTBM-403 **Thermodynamics m**
Registration #0242-403
Additional material on vapor power cycles and internal combustion engines, reactive systems, and fundamentals of heat transfer. (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. (CTBM-401 or equivalent)

Credit 4

CTBM-412 **Fluid Mechanics H**
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. (CTBM-411)

Credit 4

CTBM-551 **Machine Design I**
Registration #0242-551
Statics of linkage mechanisms, kinematics and dynamics of linkages, analytical methods of solution based on vector analysis, graphical methods, and additional vector methods of solution. (CTBM-345 or equivalent)

Credit 3

CTBM-552 **Machine Design II**
Registration #0242-552
Kinematics of cam mechanisms, dynamic analysis of cams and some vibrational analysis, cam synthesis, stress analysis of machine design, including the selection of materials. (CTBM-551)

Credit 3

CTBM-553 **Machine Design m**
Registration #0242-553
Design of machine elements (shafts, springs, gears, bearings, clutches and brakes), vibration analysis, material selection, additional analytical and graphical solutions. (CTBM-552)

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. (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. (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. (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. (CTCC-213 or equivalent)

Credit 3

CTCC-232, 233 (Lec.) **Organic Chemistry**
CTCC-237, 238 (Lab)
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. (CTCC-231 or equivalent)

Lec. 3, Lab 2, Credit 5/Qtr.

CTCC-241, 242, 243 (Lec.) **Engineering Chemistry**
CTCC-246, 247, 248 (Lab)
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. (CTAM-202 or equivalent)

Lec. 3, Lab 1, Credit 4/Qtr.

CTCC-311 (Lec.) CTCC-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; electrochemistry; Nernst Law; pH meters and electrodes. A knowledge of organic chemistry is desirable. (CTCC-213, CTCC-218 or equivalents; CTAM-210 required or to be taken concurrently)

Lec. 3, Lec./Lab 2, Credit 5

CTCC-312 (Lec.) CTCC-317 (Lab) **Analytical**
Registration #0244-312, 317 **Chemistry-Separations**
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. (CTCC-213, CTCC-218 or equivalents, CTCC-231; CTAM-210 or equivalent)

Lec. 3, Lec./Lab 2, Credit 5

CTCC-313 (Lec.) **Introduction to Physical**
Registration #0244-313 **Chemistry**
Properties of gases, kinetic-molecular theory; Boltzman Distribution functions; non-ideal behavior; first law of thermodynamics; heat capacities; Euler's theorem and homogeneous functions; thermochemistry; and introduction to the second law. (CTCC-231, CTCC-233 or equivalents; CTAM-253)

Credit 3

CTCC-401, 402 (Lec.) **Physical Chemistry**
CTCC-405, 406 (Lab)
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, absorption and heterogeneous catalysis, and macromolecular structure analysis. (CTCC-313; CTAM-305 or take concurrently)

Lec. 3, Lec./Lab 2, Credit 5/Qtr.

CTCC-403 (Lec.) CTCC-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. (CTCC-402 and 406 or equivalent)

Lec. 3, Lec./Lab 2, Credit 5

CTCC-417 **Chemical Literature**
Registration #0244-417 **and 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. (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. (CTCC-313, CTAM-253 or equivalents)

Credit 4/Qtr.

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. (CTCC-233 and 238 or equivalent)

Credit 3

CTCC-522 **Physical Organic Chemistry**
Registration #0244-522
Topics include activation parameters, 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. (CTCC-403 or equivalent)

Credit 3

CTCC-523 **Advanced Topics**
Registration #0244-523 **in Organic Chemistry**
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. (CTCC-233 and 238 or equivalent)

Credit 3

CTCC-525 (Lec.) CTCC-535 (Lab) **Qualitative**
Registration #0244-525, 535 **Organic Analysis**
A combination of chemistry and spectroscopic techniques is used to identity the structure of "unknown" organic compounds. (CTCC-233 and 238)

Lec. 1, Lec./Lab 2, Credit 3

CTCC-528 **Organic Chemistry**
Registration #0244-528 **of Polymers**
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. (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 identification of inorganic compounds. (CTCC-403 and 407 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, and molecular genetics. (CTCC-233 and 238 or equivalent)

Credit 3

CTCC-561 **Surface and Colloid**
Registration #0244-561 **Chemistry**
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. (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. (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. (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. (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. (CTCC-403 or equivalent)

Credit 3

CTCC-598 **Topics in Chemistry;**
Registration #0244-598 **Spectrometric Identification**
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. (CTCC-233 or equivalent)

Credit 3

CTCC-599 **Independent Study:**
Registration #0244-599 **Chemistry**
Faculty-directed study of chemical topics on a tutorial basis. (Consent of instructor)

Credit 1-3

Physics

CTCP-201, 202, 203 (Lec.) **College Physics**
CTCP-206, 207, 208 (Lab)
Registration #0245-201, 202,
203, 206, 207, 208
A basic course in physics using algebra and trigonometry; topics covered: statics, dynamics, harmonic motion, sound, heat, fluid-flow, wave motion, optics, electricity and magnetism. Emphasis on understanding of basic principles and problem solving. (CTAM-202. Students who have not taken CTAM-202 must take the math qualifying exam.)

Lec. 3, Lab 1, Credit 4/Qtr.

CTCP-301, 302,303 (Lec.) **Physics**
CTCP-306, 307, 308 (Lab)
Registration #0245-301, 302,
303,306,307,308
Physics for engineering and science students. The following topics are covered: statics, dynamics, harmonic motion, wave motion, sound, thermodynamics, fluid-flow, optics, electricity and magnetism. Calculus is used freely. (CTAM-253 or equivalent)

Lec. 4, Lab 1, Credit 5/Qtr.

CTCP-457 **Modern Physics**
Registration #0245-457
An introductory course of 20th century physics. Review of some classical concepts, special relativity, quantum effects, duality of waves and particles, the hydrogen atom. (CTCP-303, CTAM-305)

Credit 4

CTCP-458 **Modern Physics**
Registration #0245-458
A continuation of CTCP-457. Many electron atoms, molecular physics, solid state physics and devices. (CTCP-457 or equivalent)

Credit 4

CTCP-459 **Nuclear Physics**
Registration #0245-459
Elementary particles, nuclear structure, nuclear reactions, fission, fusion. Nuclear power, accelerating machines. (CTCP-458 or equivalent)

Credit 4

Contemporary Science

CTCS-221 **Contemporary**
Registration #0246-221 **Science: Biology**
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. (CTAM-201 or CTAM-205 or CBCH-201 or equivalent)

Credit 4

CTCS-222 **Contemporary**
Registration #0246-222 **Science: Chemistry**
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 lecture-demonstration format. (CTAM-201 or CTAM-205 or CBCH-201 or equivalent)

Credit 4

CTCS-223 **Contemporary**
Registration #0246-223 **Science: Physics**
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. (CTAM-201 or CTAM-205 or CBCH-201 or equivalent)

Credit 4

CTCS-224 **Contemporary**
Registration #0246-224 **Science: Oceanus**
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 prediction, the impact of ocean pollutants, climate fluctuations, cetacean intelligence and resources from the sea. (A TeleCourse offering)

Credit 4

CTCS-289 **Contemporary Science:**
Registration #0246-289 **Mechanical Universe**
This course is an introduction to physics for nonscience majors that uses the video course, "The Mechanical Universe . . . and Beyond," as the main method for presentation of material. The topics covered include: units and dimensional analysis, motion, force, energy, heat, waves, light, relativity, atoms and quantum mechanics. A TeleCourse offering. (CTAM-201 or CBCH-201)

Credit 4

Computer Programming

CTDP-200 **Introduction to**
Registration #0249-200 **Microcomputers**
No longer offered. See CTDS-200.

CTDP-201 **Computer Techniques**
Registration #0249-201
Programming in BASIC on RIT's VAX computers. After an introduction to time-sharing and editing procedures the course deals with the computer as a tool for solving applied problems. Not for computer systems majors. (CTAM-202)

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. (CTDS-202 or permission of a computer systems advisor)

Credit 4

CTDP-210 **Program Design and**
Registration #0249-210 **Validation**
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 are required. (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, functions, logical operations, storage allocations, statements. I/O manipulation and subprograms. Debugging and diagnostic methods. Programming projects will be required. (CTDS-202 or permission of advisor)

Credit 4

CTDP-241 **Programming I**
Registration #0249-241 **Algorithmic Structures**
An introduction to programming emphasizing the development and documentation of modular computer-based algorithms. A structured procedural programming language (e.g. Pascal) is used to demonstrate modern programming principles. Topics include variables, expressions and assignment, control structures (sequencing, selection and repetition), modularity via procedures and functions, parameter mechanisms, and identifier scope in block structured languages. Programming assignments are an integral part of this course. (CTDS-202)

Credit 4

CTDP-242 **Programming II**
Registration #0249-242 **Data Structures**
An introduction to the basic data structures used in computer applications. Both abstract concepts and implementation details will be discussed, including comparisons of alternate implementations. Topics include arrays, records, pointers, dynamic storage allocation, linked lists, stacks, queues and trees. Programming projects are required. (CTDP-241)

Credit 4

CTDP-243 **Programming HI**
Registration #0249-243 **Design and Implementation**
A first course on the design and implementation of moderately large single-programmer systems. Modern principles of design and testing will be presented in class and reinforced by programming assignments. The importance of both internal and external program documentation will be stressed. Topics include top-down design, stepwise refinement, test data selection, modularity measures (cohesion and coupling), common programming paradigms, and advanced file I/O. Programming projects are required. (CTDP-242, CTDP-305)

Credit 4

CTDP-301 **COBOL Programming**
Registration #0249-301
No longer offered. See course CTDP-307.

CTDP-304 **Advanced COBOL Programming**
Registration #0249-304
No longer offered.

CTDP-305 **Assembly Language**
Registration #0249-305 **Programming**
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. Programming projects will be required. (CTDS-202)

Credit 4

CTDP-307 **Business Applications**
Registration #0249-307 **Programming**
The mastery of the techniques and concepts of programming within a business programming environment. Emphasis on algorithmic solutions to business problems, including report generation, sorting and table processing and generation, complex I/O processing. Programming projects are required. (CTDS-325)

Credit 4

CTDP-318 **APL Programming**
Registration #0249-318 **Techniques 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 business systems applications. Programming projects will be required. (A high-level programming language)

Credit 4

CTDP-320 **Computer Programming**
Registration #0249-320 **for Engineers**
Computer programming in FORTRAN. Application emphasis is on numerical methods. Programming projects are required. (CTAM-305)

Credit 4

CTDP-330 **PL/1 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, user written functions and subroutines. Emphasis on developing well-structured and modular programs. Programming projects are required. (A high level programming language)

Credit 4

CTDP-488 **Programming Systems**
Registration #0249-488 **Workshop**
A workshop for the mastery of the techniques and concepts of programming systems, design and implementation. Students will work with data modeling, both with and without a data-base management system product. Student will gain experience with system specification and design charting techniques, project scheduling and management and programming team experience. Programming projects will be required. (CTDP-307, CTDS-335, CTDS-485)

Credit 4

Computer Systems

CTDS-200 **Introduction to Computers &**
Registration #0250-200 **Programming**
Basic concepts and overview of computer science. The topics include historical development, algorithms, flowcharting and programming in BASIC. Exposure to assembler language, hardware concepts, software concepts, binary and hex numbers and logic. Application of the computer to various disciplines. Not for computer science majors. (High School intermediate algebra) (Also a TeleCourse offering)

Credit 4

CTDS-201 **Applications Software**
Registration #0250-201
An introduction to several types of applications software. The lectures and hands-on experience labs are oriented to the IBM PC. Major subjects covered will include: hardware components; disk storage; disk operating system (DOS); word processing (WORDSTAR or WORDPERFECT); spreadsheeting (LOTUS 1-2-3); and data base management (DBASE III). A course for persons involved in information management. (CTDS-200)

Credit 4

CTDS-202 **Introduction to**
Registration #0250-202 **Computer Science**
An introduction to the computer: information representation, instruction execution and the software interface to the user. Topics include integer and floating point arithmetic, logical operations, introduction to machine and assembly language, input/output operations, operating systems. (Three years high school mathematics, permission of advisor)

Credit 4

CTDS-230 **Discrete Structure**
Registration #0250-230
Foundations of discrete mathematics. Topics include: prepositional logic, functions and relations, algebra of sets, Boolean algebra and Boolean functions, permutations and combinations, vectors and matrices, graphs, digraphs, trees and strings. (CTAM-265)

Credit 4

CTDS-315 **Digital Computer**
Registration #0250-315 **Organization**
Introduction to computer architecture and implementation. Topics include a review of arithmetic and Boolean algebra; combinatorial 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. The laboratory experiments introduce elementary integrated circuit building blocks including gates, flip-flops, registers, counters and elementary sequential circuits. (CTAM-265, CTDP-305)
Credit 4

CTDS-320 **Data Structure Analysis**
Registration #0250-320
Information structures: sequential lists, stacks, queues, sequential allocation; linked lists, doubly linked lists, linked allocation; trees, tree traversal; lists, orthogonal lists, multilinked structures; dynamic storage allocation and garbage collection. Programming projects are required. (CTDP-210)

Credit 4

CTDS-325 **Data Organization and**
Registration #0250-325 **Management**
A course dealing with the methodology associated with the external storage of data. Topics include file organization (sequential, indexed and direct access physical organization); space optimization and directory organization; an introduction to external sorting and searching and the basis of data modeling, data base organization and management. Programming projects are required. (CTDP-243)

Credit 4

CTDS-335 **System Specification, Design**
Registration #0250-335 **and Implementation**
Students are introduced to basic concepts of system specification and design, systems 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 HIPO charts, NS charts, etc. and to the structured design methods of Yourdon. (CTDS-325)

Credit 4

CTDS-340 **Finite State Machines**
Registration #0250-340 **and Automata**
Topics include finite state models, machine capabilities, descriptive methods, decomposition methods, regular expressions, bilateral analysis and synthesis, sequential iterative systems and space-time transformations. (CTDS-315)

Credit 4

CTDS-400 **Logical Design**
Registration #0250-400
An introduction to switching theory, sequential circuit analysis and synthesis, error detection, error correction networks, speed-up techniques, serial and parallel approaches, interfacing techniques. (CTDS-315)

Credit 4

CTDS-420 **Data Communication Systems**
Registration #0250-420
Data communication and telecommunication systems. Including communication techniques and interfaces, common carrier implications and tariffs, multiplexors; buffering response time and human factors; network design analysis and cost, software considerations. (CBCH-351, CTDS-315)

Credit 4

CTDS-430 **Numerical Methods**
Registration #0250-430
Topics included are: error analysis, roots of an equation, solution of systems of equations, interpolation, power series calculation of functions, numerical integration and first order differential equations. Programming projects are required. (SMAT-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, resource management, memory management, overlays, static and dynamic relocation, virtual memory, file systems, logical and physical **I/O,** device allocation, process and resource protection. (CTDS-315 and CTDS-325)

Credit 4

CTDS-480 **Formal Languages**
Registration #0250-480
Formal language theory and principles. Topics include context free, context sensitive grammars, regular expressions; Turing machines; introduction to computability. (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. (CTDS-325)

Credit 4

CTDS-520 **Computer Architecture**
Registration #0250-520
A study of computer architecture and design. Topics include review of basic theories, hardware technology, parallel and distributive logic, synchronous and asynchronous machines and analysis of commercial machines. Alternatives to classical machine structure. (CTDS-315)

Credit 4

CTDS-525 **Assemblers, Interpreters,**
Registration #0250-525 **and Compilers**
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. (CTDS-325)

Credit 4

CTDS-530 **Discrete Simulation**
Registration #0250-530
Computer simulation techniques. Abstract properties of simulation modeling, analysis of a simulation run and statistics. The simulation language GPSS will be taught. Programming projects are required. (CBCH-351 or equivalent and programming experience)

Credit 4

CTDS-545 **Processor Design Concepts**
Registration #0250-545
A survey of bit-slice processor design and implementation techniques. Topics include microprogramming and emulation, comparison of microcode and hardwired logic, I/O processors and subsystems. (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 students an overview of recent technological and theoretical advances. Reports on outside readings. (Senior 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. (CTDS-315 and CTDS-325)

Credit 4

Lower Division Electrical Technology

CTEE-101, 102, 103 **Basic Mathematics**
Registration #0253-101, 102, 103 **for Electronics**
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 Kirchhoffs Laws, trigonometric functions, right triangles and vector algebra. (One year of high school mathematics or equivalent)

Credit 3/Qtr.

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. (Concurrent enrollment in CTEE-101)

Credit 1/Qtr.

CTEE-321 (Lec.) **Digital Systems**
CTEE-326 (Lab)
Registration #0253-321, 326
Introduction to binary and octal number systems, logic components and their functions; truth tables; gates, switches, counters, flipflops, integrators, differentiators and adders; application to mechanical, relay, fluidic, pneumatic and electronic digital logic systems. (CTIL-203 or equivalent)

Lec. 3, Lab 1, Credit 4

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. (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. (CTIL-203)

Credit 3

CTEE-331 **Programmable Controllers**
Registration #0253-331
Overview of programmable controllers, software and hardware, processor unit and memory, programming tools, input/output systems and languages.

Credit 3

CTEE-361, 362, 363 (Lec.) **Applied Electronics**
CTEE-366, 367, 368 (Lab)
Registration #0253-361, 362, 363,366,367,368
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. (CTIL-203)

Lec. 3, Lab 1, Credit 4/Qtr.

Lower Division Mechanical Technology

CTEM-301 **Statics**
Registration #0254-301
Basic principles of statics, systems of forces, free-body diagrams, equilibrium conditions, friction, centroids, moments of inertia. (CTCP-201 or equivalent)

Credit 4

CTEM-302 **Dynamics**
Registration #0254-302
Principles of dynamics; kinematics and kinetics of rectilinear, rotational and plane motion; velocity, acceleration; inertia; work, energy, power, impact. (CTEM-301 or equivalent)

Credit 4

CTEM-303 **Strength of Materials**
Registration #0254-303
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. (CTEM-301 or equivalent)

Credit 2 Credit 2/Qtr.

CTEM-315 **Principles of Mechanical**
Registration #0254-315 **Design I**
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. (CTEM-303)

Credit 3

CTEM-316 **Principles of Mechanical**
Registration #0254-316 **Design Bt**
Thin-walled tubes, non-circular shafts, springs, screw threads, belts, stress in cylindrical shells. (CTEM-315)

Credit 3

CTEM-317 **Principles of Mechanical**
Registration #0254-317 **Design m**
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. (CTEM-316 and CTID-203)

Credit 3

CTEM-420 **Calculus for Technologists I**
Registration #0254-420
No longer offered. See SMAT-420.

CTEM-421 **Calculus for Technologists II**
Registration #0254-421
No longer offered. See SMAT-421.

CTEM-422 **Solutions of Engineering**
Registration #0254-422 **Problems**
No longer offered. See SMAT-422.

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. (CTIS-203 or equivalent)

Credit 3/Qtr.

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-314, 315 **Materials Technology I, II**
Registration #0255-314, 315
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. (CTEF-314)

Credit 3/Qtr.

CTEF-328 **Report Writing**
Registration #0255-328
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-360 **Introduction to**
Registration #0255-360 **Numerical Control**
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

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 gauging. (CTEF-202)

Credit 4

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. (CTEF-202)

Credit 3

CTEF-391 **Production Control**
Registration #0255-391
This course prepares the student to deal with production planning algorithms and inventory control models. Subjects such as forecasting, inventory control techniques, production planning and scheduling and material requirements planning will be presented. (CTEF-202)

Credit 4

Building Technology (Industrial Technology)

CTIB-101, 102 **Architectural & Structural**
Registration #0261-101, 102 **Blueprint Reading (Residential, Commercial)**
Reading and interpretation of architectural and structural drawings; use of scales, symbols for materials, drafting conventions, schedules and specifications; freehand sketching, elementary mathematics, and some quantity take-off.

Credit 3/Qtr.

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, isometrics, and perspectives. Preparation of drawings required in the design and construction process of different building types. (CTIB-201)

Credit 2

CTIB-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 with concentration on detail and construction drawings. (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, perspective presentation and related design skills. (CTIB-203)

Credit 2/Qtr.

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, perspective presentation and related design skills. (CTIB-206)

Credit 2/Qtr.

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. (High school algebra and trigonometry or equivalent)

Credit 4

CTIB-241 **Building Construction**
Registration #0261-241 **(Materials)**
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, specifications and construction management. (CTIB-241 or equivalent)

Credit 3/Qtr.

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. (CTIB-101 or CTIB-203 or equivalent)

Credit 3/Qtr.

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 introduction to computer analysis. (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. (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. (CTIB-206 or equivalent)

Credit 2/Qtr.

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 detail and assembly drawings, however, the major emphasis of the course will be the application of modern geometric dimensioning and tolerancing as used on all types of drawings as derived from the ANSI Y14.5 government standards.

Credit 1

CTID-141, 142, 143 **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. (CTID-203 and CTIS-203, CTAM-103 or equivalents)

Credit 2/Qtr.

CTID-151, 152, 153 **Machine Design**
Registration #0262-151, 152, 153
These courses cover analytically the major topics of machine design. They include 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. (CTAM-103, CTID-203, CTIS-203 or equivalent)

Credit 3/Qtr.

CTID-201 **Engineering Drawing**
Registration #0262-201
This is 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 drawing, 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. (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 and includes 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 complete machine component. (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. (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 where applicable throughout the course. (CTID-212 or equivalent)

Credit 2

Electromechanical (Industrial Technology)

CTIL-201 (Lec.) CTDL-206 (Lab) **Elements of Electricity**
Registration #0264-201, 206 **and Electronics**
This course and its mandatory associated laboratory provide an introduction to Basic Electricity and its application to direct current circuitry. Included are principles relating to current, voltage, resistance, OHMS law, problems related to various circuit configurations are presented. (CTAM-103 or equivalent)

Lec. 3, Lab 1, Credit 4

CTIL-202 (Lec.) CTIL-207 (Lab) Elements of Electricity
Registration #0264-202, 207 and Electronics
This course and its mandatory associated laboratory provide an introduction to Basic Electricity and its application to alternating current circuitry. Included are principles relating to current, voltage, inductance, capacitance, inductive reactance, capacitive reactance, impedance, phase angle, power factor, sinusoids, power, etc. Applicable principles necessary to solve problems related to various circuit configurations are presented. (CTAM-103 or equivalent)

Lec. 3, Lab 1, Credit 4

CTIL-203 (Lec.) CTBL-208 (Lab) Elements of Electricity
Registration #0264-203, 208 and Electronics
This course and its mandatory associated laboratory provide an introduction to Basic Transistor Theory. The theory and application of PN Junction diodes and PNP and NPN Transistors are fully developed. A thorough analysis of the common-base, common-emitter and common-collector configurations is provided. (CTAM-103 or equivalent)

Lec. 1, Lab 3, Credit 4

CTIL-221, 222 Mechanical Components
Registration #0264-221, 222 and 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, belt drives, chain drives, pins, couplings, cams, linkages, switches. Independent approach to practical problem solving is stressed. (CTCP-201, 202 and CTID-201, 202, 203 or equivalents)

Credit 4/Qtr.

CT1L-301, 302 (Lec.) Machines and Power Systems
CTIL-306, 307 (Lab)
Registration #0264-301, 302, 306,307
Basic concepts and characteristics of D.C., synchronous and induction 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, sychro control transformers and their systems applications. Lab sessions develop a qualitative feel for characteristics and applications of power systems, machines and their control. (CTIL-201, 202, 203 and CTAM-201, 202 or equivalents)

Lec. 3, Lab 1, Credit 4/Qtr.

CTIL-303 (Lec.) CTIL-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. (CTCP-201, 202)

Lec. 3, Lab 1, Credit 4

CTIL-351,352 Electromechanical Devices
Registration #0264-351, 352 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 transducer. LVDT, proximity sensors, strain gauges, pressure, flow, level transducers, control values, motors, mechanisms and control devices; open loop, closed loop, digital analog, sequential systems. Analysis of systems representative of types found in industrial use today. The laboratory includes analysis and troubleshooting of operational electromechanical systems. (CTIL-301/306 and 302/307)

Credit 4/Qtr.

CTIL-353 (Lec.); CTIL-358 (Lab) Introduction to
Registration #0264-353, 358 Microprocessors
This course will provide the student with an understanding of microprocessor fundamentals; binary numbering system and common codes; logical operations and their importance in microprocessor applications; and a brief history of the development of microprocessors up to the present with a comparison of size and speeds. Microprocessor architectures, memory and I/O requirements are discussed as well as various common hardware applications. In addition to hardware, the software environment will be presented. The classroom endeavors are closely related to the associated laboratory efforts. (CTIL-201, 202, 203)

Lec. 3, Lab 1, Credit 4

Machine Shop

NOTE: All courses must be taken in the proper sequence in each program. For additional information call department, 475-5006.

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/Qtr.

CTIS-104 to CTIS-109 Advanced Machine Shop I, II
Registration #0266-104, 105,
106,107, 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. (CTIS-203)

Credit 1/Qtr.

CTIS-111 to CTIS-119 Instrument Making &
Registration #0266-111,112, Experimental Work I, II, m
113,114,115,116,117,118,119
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. (CTIS-203)

Credit 1/Qtr.

CTIS-121 to CTIS-129 Tool and Die Making I, II, HI
Registration #0266-121, 122,
123,124,125,126,127,128,129
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. (CTIS-106)

Credit 1/Qtr.

CTIS-131 to CTIS-139
Registration #0266-131, 132, 133—Hand Screw Mach Op
Registration #0266-134,135, 136—Automatic Screw Mach Op
Registration #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. (Mechanical Blueprint Reading CTID-101 should be taken concurrently)
Credit 3/Qtr.

CTIS-151, 152, 153 **Shop Mathematics**
Registration #0266-151, 152, 153
Precision measuring instruments, calculations 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/Qtr.

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. (CTIS-153 or equivalent)

Credit 2/Qtr.

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. Offered Winter and Spring quarter evenings.

Credit 3/Qtr.

CTIS-161, 162 **Heat Treatment**
Registration #0266-161, 162
Practical heat treatment of metals; Carburizing, cyaniding, nitriding, 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/Qtr.

CTIS-201, 202, 203 (Lec.) **Machine Shop**
CTIS-206, 207, 208 (Lab)
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. Must register for lecture and lab.

Credit 2/Qtr.

CTIS-204 (Lec.) CTIS-209 (Lab) **Machine Shop**
Registration #0266-204, 209
A combination of CTIS-201, 202, 203 and 206, 207, 208. Offered summer only.

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. (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. (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. (CAM) Computer Aided Manufacturing is introduced utilizing the E-Z CAM computer aided system. (CTIS-281 or 282 or programming experience)

Credit 3

Machine Tool

CAIM-112 **Principles of Blueprint**
Registration #0270-112 **Reading H**
This course is a continuation of unit I, dealing with further study of machine detail and assembly drawings. However, the major emphasis of the course will be the application of modern geometric dimensioning and tolerancing as used on all types of drawings and derived from the ANSI Y14.5 government standards.

Class 3, Credit 3

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, handsaws, and drill presses. Also covered are the basic skills in layout and bench work.

Lab 15, Credit 4

CAIM-121 **Basic Machine Shop I (DT)**
Registration #0270-121
This course is intended to introduce the student to hands-on experience performing such tasks as: tool grinding, thread cutting, drilling layout and bench work. The techniques of precision measurement are covered to a great extent. Safety and proper work habits are emphasized throughout the quarter.

Lab 5 hours per week, Credit 2

CAIM-122 **Basic Machine Shop H (DT)**
Registration #0270-122
In this course the student will be introduced to more advanced types 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, Credit 2

CAIM-123 **Machine Shop (AET)**
Registration #0270-123
This course is designed to introduce the student to hands-on machine shop experience. 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, Credit 2

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 to plastics and powder metals, their properties and processing.

Class 3, Credit 3

CAIM-214 **Numerical Control**
Registration #0270-214 **Programming and Machining**
An introduction to the field of numerical control and *NIC* programming. Techniques for both manual and computer assisted programming of cutter paths are practiced. Programs include: turning and milling in point to point, linear and circular interpolation modes, use of loops, macros, canned cycles and cutter compensation. Operation of state-of-the-art CAM computer, printer, plotter, bit pad, DNC and CNC controls included. (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. (CAIM-110, CAIM-120)

Class 3, Credit 3

CAIM-220 **Diemaking**
Registration #0270-220
Introduction to diemaking and its relati6n to the production process of stamping sheet and plate materials, both metals and nonmetals.

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 emphasized. (CAIM-110, CAIM-231.)

Class 3, Credit 3

CAIM-222 **Metallurgy and Heat Treating**
Registration #0270-222
An introductory course in the physical and mechanical characteristics of metals and alloys. Heat treating of steels and the use of the iron-carbon equilibrium diagram, transformation diagram, hardenability of tool steels and alloy steels.

Class 3, Lab 3, Credit 3

CAIM-231 **Industrial Machine Shop II**
Registration #0270-231
Extensive application and advanced projects using 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. (CAIM-120, CAIM-106 or equivalent)

Lab 15, Credit 4

CAIM-232 **Intermediate Machine Tool**
Registration #0270-232 **Technology**
Complex part and assembly machining involving more advanced techniques on turning, milling centers, and surface and cylindrical grinders. Principles of cutting theory and basic cutter grinding are discussed and demonstrated. Advanced manufacturing processes involving electro discharge machining (EDM), numerical control *(NIC)*, and Computer-Aided Manufacturing (CAM) are introduced and applied. (CAIM-231)

Lab 15, Credit 4

CAIM-233 **Advanced Machine Tool**
Registration #0270-233 **Technology**
This course teaches the manufacturing and assembly processes involved in building a die, jig or fixture needed to produce a part to print specifications.

Students manufacture a die, jig or fixture by utilizing standard machining techniques, and also special machines and equipment such as: electrical discharge machine (EDM), cylindrical grinder, jig bore, internal grinder, honer, radius dresser, and heat treating of 0-1 tool steel. Components and piece parts are inspected for conformance to the prints.

Lab 15, Credit 4

Drafting Technology

CA1D-110 **Principles of Blueprint**
Registration #0271-110 **Reading**
To aid the student in reading, visualizing and interpreting basic blueprints in the industrial environment.

Class 3, Credit 3

CAID-147 **Blueprint Reading (EMT/PKG)**
Registration #0271-147
An introductory course which develops the concept of how and why engineering drawings exist. Drawings are sketched and interpreted. Mechanical, electrical, and hydraulic blueprints are studied and include working with tolerances and geometric tolerancing.

Class 1, Lab 2, Credit 2

CAID-201 **Introduction to Computer-**
Registration #0271-201 **Integrated Manufacturing**
This course will discuss the multidisciplinary and interrelated nature of Computer-Integrated Manufacturing through the use of a common data base, information resource management, and interpersonal communication skills. Topics will include computer hardware and software applications for areas of factory automation, manufacturing processes, and system controls. Case studies and periodicals will be used to illustrate working models.

Credit 3

CAID-208 **Introduction to Computers**
Registration #0271-208
Presents computer terminology, functions and commands. Programs will be developed.

Class 5, Lab 5, Credit 3

CAID-210 **Manufacturing Processes**
Registration #0271-210
Manufacturing Processes will acquaint students with methods of fabrication which are commonly used to convert ideas and raw materials into usable products and/or machines.

Class 5, Credit 5

CAID-211 **Materials Selection**
Registration #0271-211
Investigates the use and conditions of materials in a product life cycle. The atomic, chemical and mechanical composition of materials, including the testing of materials will be studied.

Class 3, Credit 2

CAID-215 **Drafting Mechanics I**
Registration #0271-215
Presents the methods and tools to measure and qualify the physical world. Topics will include components, forces, motion and problem solving as it relates to mechanical physics. (CAID-255 is a required lab.)

Class 4, Credit 4

CAID-216 **Engineering Drawing for Machinists**
Registration #0271-216
The 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
This course will investigate the operation of different components in a mechanical system. Appropriate component selection related to specific design application also will be studied.

Class 5, Credit 3

CAID-219 **Drafting Mechanics III**
Registration #0271-219
Will provide a basic working understanding of electricity, current flow and power with applications in simple circuits.

Class 3, Credit 2

CAID-225 **Drafting Mechanics Lab**
Registration #0271-225
A laboratory course providing hands-on experience with experiments dealing with components, forces and motion.

Lab 3, Credit 1

CAID-238 **Technical Drawing I (Descriptive Geometry)**
Registration #0271-238
Technical Descriptive Geometry is a survey of the theories and methods used to graphically represent the solutions to spatial relationship problems dealing with points, lines, and planes. Projections and multiview projection theories, visualization of points, lines, and planes, and solids, size and shape description, auxiliary views, developments, and intersections will be covered. Problems will be solved through sketching and instrument drawings. (This course satisfies the requirements of CTID-211 and 212.)

Lec. 3, Lab 5, Credit 5

CAID-239 **Technical Drawing II**
Registration #0271-239
Technical Drawing II will present technical information to analyze and prepare accurate mechanical production drawings from verbal instructions and engineers' sketches. Accuracy and neatness is stressed. Proficiency is developed in both coordinate and geometric dimensioning and tolerancing. Four significant working drawing projects will be accomplished, with consideration given to manufacturing processes and operations. (CAID-238)

Class 2, Lab 8, Credit 5

CAID-240 **Technical Drawing III**
Registration #0271-240
Will enable the student to interpret an engineer's design layout. The student individually and in a team setting will draw a complete set of working detail drawings, including a listing of manufacturing methods, materials, specifications, heat treatment and parts listed. (CAID-239)

Class 1, Lab 6, Credit 3

CAID-241 **Technical Drawing IV**
Registration #0271-241
This course applies the study of electronic components and graphic symbology to the practice of drawing schematic, block, and logic diagrams and printed circuit board layouts. A portfolio of drawings will be developed by the completion of the course.

Class 2, Lab 3, Credit 2

CAID-245 **Introduction to Computer-Aided Drafting (CAD)**
Registration #0271-245
The course includes an overview of the architecture and components of various **CAD** systems. **A CAD** system will be used to gain operator skills. **(CAID-238** or equivalent)

Class 1, Lab 3, Credit 2

CAID-247 **Computer-Aided Drafting (CAD)**
Registration #0271-247
The purpose of this course is to develop a set of working drawings with advanced system commands. Flowcharting and file management techniques will be required as supporting documentation for each project. The course will also include the digitizing board as an electronic input device for existing drawings and/or sketches. (CAID-245)

Class 2, Lab 4, Credit 3

CAID-248 **CAM-CNC**
Registration #0271-248
The study of basic concepts for computer numerical control and computer-aided machining. NC Programs will be produced manually and with the aid of CAM equipment. Techniques of point to point, continuous path, linear and circular interpolation, loops and macros and special canned cycles will be covered and used. Prototype parts will be produced using numerical control machines. Projects will be drawn in CAD and converted to codes for numerical control equipment (0271-245)

Credit 4

CAID-249 **Fundamentals of Designing Printed Circuits**
Registration #0271-249
This course will provide practical knowledge and skills of printed circuit board terminology, layout, components, construction techniques, and design parameters. Camera ready (manually taped) board layouts will be generated by interpreting schematic diagrams, parts lists, and engineering and component specifications.

Lecture 3, Lab 3, Credit 4

CAID-251 **CAD/CAM Printed Circuit Board Layout**
Registration #0271-251
This course is designed to cover all aspects necessary to produce the libraries, artwork, and documentation requirements of a CAD generated printed circuit board layout. To maximize CAD hands-on time, class size will be limited. (CAID-249 or equivalent)

Class 3, Lab 3, Credit 3

Communications

CAIG-104 **Communication Skills**
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-206 **Technical Communication**
Registration #0274-206
An introduction to the principles of technical writing for the technician. Assignments typically relate 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 explore career options, then search, apply and interview for employment. (CAIG-105, 204)

Class 4.5, Credit 4

CAIG-210 **Interpersonal Communications**
Registration #0274-210
An opportunity to explore and practice the communication skills that service technicians will use on the job. Emphasis will be focused on ways to work with customers and clients as a representative of the service organization. (CAIG-105)

Class 2, Credit 1

CAIG-220 **Composition:**
Registration #0274-220 **Written and Oral**
An emphasis on developing the college essay and adapting the writing process to oral presentations. Topics include reasoning and persuasion; planning, organizing, developing and revising the expository essay. Documented library research paper is required. (CAIG-105)

Class 4.5, Credit 4

Mathematics

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,**
Registration #0274-207, 208 **HI**
A standard pre-calculus sequence.
207: Topics include a review of the fundamentals of algebra; relations, functions and their graphs; solution of linear, fractional and radical equations; solution of linear systems; exponents and radicals; vectors. (CAIG-107 or equivalent)
208: Topics include quadratic functions and conic sections; logarithmic and exponential functions; trigonometric functions, equations, identities and graphs; inverse trigonometric functions; polar coordinates and graphs; variation. (CAIG-207 or equivalent)

Class 4, Credit 4

Computer Service

CAIC-201 **Fundamentals of Computers**
Registration #0275-201
An introduction to electronic data processing. A study of basic computer theory, file storage media, input-output devices, binary and hexadecimal number systems and programming techniques.

Class 3, Recitation 3, Credit 4

CAIC-202 **Computers I**
Registration #0275-202
The study of the organization and operation of microcomputers and microprocessors, with emphasis on CPU operation during machine and assembly program execution. Microprocessor instruction sets in regard to data transfer, arithmetic and logic instructions, and control over I/O devices will be studied. (CAIC-201, CAIC-212)

Class 3, Lab 4, Credit 4

CAIC-203 **Computers II**
Registration #0275-203
The analysis of microcomputers with emphasis on system logic, timing and interfacing to I/O devices. Functional and in depth operation of these components will be studied, with use of diagnostic programs and digital test equipment. (CAIC-202, CAIE-205, CAIC-215)

Class 2, Lab 4, Credit 3

CAIC-204 **Computers HI**
Registration #0275-204
The study of micro and mini-computer operating systems used in industry today. The student will learn file management, copy, backup, directory, and formating routines along with various methods of file protection. These commands will be used to communicate with the computer system during systems troubleshooting and preventative maintenance techniques. (CAIC-201)

Class 3, Lab 4, Credit 4

CAIC-205 **Introductory Programming I**
Registration #0275-205
An interactive programming course utilizing the BASIC language. Emphasis is placed on development of skills necessary for the technician to communicate with a computer using the BASIC language.

Class 1, Lab 2, Credit 2

CAIC-207 **Introductory Programming II**
Registration #0275-207
An interactive programming course utilizing the PASCAL language. Emphasis is placed on the development of skills necessary for the technician to communicate with a computer using the PASCAL language.

Class 1, Lab 2, Credit 2

CAIC-209 **Introductory Programming III**
Registration #0275-209
An interactive programming course utilizing the FORTRAN language. Emphasis is placed on the development of skills necessary for the technician to communicate with a computer using the FORTRAN language.

Class 1, Lab 2, Credit 2

CAIC-211 **Introductory Programming IV**
Registration #0275-211
An interactive programming course utilizing the COBOL language. Emphasis is placed on the development of skills necessary for the technician to communicate with a computer using the COBOL language.

Class 1, Lab 2, Credit 2

CAIC-212 **Electrical/Electronic**
Registration #0275-212 **Schematic Interpretation**
The student will learn to read and interpret various diagrams related to the servicing of computers. Drawings studied will be electrical wiring diagrams, schematics, logic and block diagrams and others found in service manuals.

Class 2, Credit 2

CAIC-215 **Special Tool/Equipment Use**
Registration #0275-215
The care and use of special tools and testing equipment used to repair computers will be studied. The student will demonstrate proficiency in a lab situation. (CAIE-203, CAIC-212)

Lab/Dem. 2, Credit 1

CAIC-216 **Digital Circuits**
Registration #0275-216
A study of the logic concepts and circuits used in digital systems including measuring instruments, communications, and computers. Integrated circuits are used to demonstrate the digital techniques of gating, counting, storing, shifting, and converting. (CAIE-205)

Class 3, Lab 4, Credit 4

CAIC-218 **Linear Circuits**
Registration #0275-218
The properties of linear integrated circuits and their applications in power supplies, regulators, amplifiers, oscillators, and multivibrators will be studied. (CAIC-216)

Class 1.5, Lab 3, Credit 2

CAIC-220 Computer Systems Registration #0275-220 Troubleshooting
Hands on experience will be given in diagnosing and repairing faults in computers using documentation and test equipment. A specific fault analysis approach will be taught that emphasizes a systematic approach to troubleshooting. (CAIC-203, CAIC-216)

Lab 15, Credit 5

CAIC-295 Independent Research Registration #0275-295 Project
To allow the student to use the knowledge that he/she has learned in the Computer Service Program. Students will demonstrate this knowledge by doing a research project concerning computers and/or computer maintenance. Emphasis will be placed on not only the accomplishment of the experiment/project, but skills in writing a report documenting progress throughout the experiment/project. The student and faculty member(s) involved will submit, no later than ten class days, a project proposal with goals, tasks, and objectives for review and approval by the department chair and the director. The student will be expected to complete the assignment with minimal faculty supervision. The amount of credit awarded is dependent on the lab time and the amount of outside work required. (Must have department head approval)

Credit 1-4

Graduate Courses

Statistics

CQAS-701 Statistical Concepts
Registration #0280-701
A service course designed for non-concentrators which emphasizes statistical thinking instead of mathematical manipulations. This is an intuition-based introduction to the subject. Topics include: exploratory data analysis, methods for collecting data, statistical inference, regression analysis, and analysis of variance. This course does not count as credit for the MS degree in statistics. (None)

Credit 4

CQAS-711 Fundamentals of Statistics I
Registration #0280-711
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 analysis and insight; learning to understand probability as the science of uncertain events; concepts of random variables and their associated probability models; meaning and practical use of the Central Limit Theorem.

Credit 3 or 4

CQAS-712 Fundamentals of Statistics II
Registration #0280-712
Continuation of CQAS-711. Topics: concepts and strategies of statistical inference for making decisions about populations 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 of a response variable to one or more predictor variables. (Fund, of Statistics I CQAS-711 or Consent of the Department)

Credit 3 or 4

CQAS-721 Statistical Quality Control I
Registration #0280-721
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 attributes; computerization procedures for control charts; tolerances, specifications, and process capability studies; basic concepts of total quality control, and the management of the quality control function.

Credit 3

CQAS-731 Statistical Quality Control II
Registration #0280-731
Investigation of modern acceptance sampling techniques with emphasis on industrial applications. 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.

Credit 3

CQAS-742 Statistical Computing
Registration #0280-742
An advanced course in statistical computing using SAS statistical software. The course will cover basic SAS procedures; the creation, manipulation, and analysis of data bases; graphical display techniques; and the development and writing of custom numerical analysis procedures. (Design of Experiments II CQAS-802 and Regression Analysis I CQAS-841)

Credit 3

CQAS-761 Reliability
Registration #0280-761
A methods course in reliability practices: What a reliability engineer must know about reliability predictions, 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. (Fund, of Statistics II CQAS-712)

Credit 3

CQAS-781 Quality Management
Registration #0280-781
A course designed to cover concepts and methods of quality management. Topics include: basic concepts, history of quality control, quality policy, economics of quality, quality costs, organization for quality, design for system effectiveness, manufacturing planning for quality, and quality data systems.

Credit 3

CQAS-782 Quality Engineering
Registration #0280-782
A course designed to cover important elements of quality engineering. Topics include: specifications, statistical tolerancing, measurement, vendor relations, process control, motivation, customer relations, diagnostic techniques, process improvement studies, and quality planning. (Consent of the Department)

Credit 3

CQAS-783 Quality Engineering by Design
Registration #0280-783
The Taguchi Method of off-line control including parameter design and tolerance design leading to improved products and processes at lower costs. (Design of Experiments II CQAS-802)

Credit 3

CQAS-791 Statistical Methods Registration #0280-791 in Health Sciences
A course designed as an introduction to statistical methods for those involved in the health sciences. Topics include: types of biological data, descriptive statistics, tests of significance, experimental design, tests of association, relative risk, diagnostic tests. (Fund, of Statistics II CQAS-712)

Credit 3

CQAS-792 Biological Assays
Registration #0280-792
An advanced course in biostatistics which deals with the important research concerns of identifying and verifying drug-dose response. Topics include: parallel-line assays, slope-ratio assays, quantal response assays. (Design of Experiments II CQAS-802)

Credit 3

CQAS-801 Design of Experiments I
Registration #0280-801
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 design. Practical applications to civil engineering, pharmacy, aircraft, agronomy, photo-science, genetics, psychology, and advertising. (Fund, of Statistics II CQAS-712)

Credit 3

CQAS-802 **Design of Experiments II**
Registration #0280-802
Continuation of CQAS-801. Topics: factorial experiments; fractional, three-level, and mixed factorial designs; response surface exploration. Practical applications to: medical areas, alloys, highway engineering, plastics, metallurgy, animal nutrition, sociology, industrial and electrical engineering. (Design of Experiments I CQAS-801)

Credit 3

CQAS-821 Theory of Statistics I
Registration #0280-821
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. (Fund, of Statistics II CQAS-712 or consent of the Department)

Credit 3

CQAS-822 Theory of Statistics II
Registration #0280-822
Continuation of CQAS-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. (Theory of Statistics I CQAS-821)

Credit 3

CQAS-824 Probability Models
Registration #0280-824
An introduction to probability theory and stochastic processes. Topics include: random variables, conditional probability and expectation, Markov chains, renewal theory, queuing theory, and reliability. (Theory of Statistics I CQAS-821)

Credit 3

CQAS-830 Multivariate Analysis I
Registration #0280-830
This course 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-tests, ANOYA, MANOVA, regression analysis, repeated measures, quality control, and profile analysis. (Design of Experiments II CQAS-802)

Credit 3

CQAS-831 Multivariate Analysis II
Registration #0280-831
A continuation of CQAS-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 variable. Practical applications will be emphasized. (Multivariate Analysis I CQAS-830)

Credit 3

CQAS-841 Regression Analysis I
Registration #0280-841
A methods course dealing with the general relationship problem. Topics include: the matrix approach to simple and multiple linear regression; analysis of residuals; dummy variables; orthogonal models; and computational techniques. (Design of Experiments II CQAS-802)

Credit 3

CQAS-842 Regression Analysis II
Registration #0280-842
A continuation of CQAS-841. Topics: selection of best linear models; regression applied to analysis of variance problems; nonlinear estimation; and model building. (Regression Analysis I CQAS-841)

Credit 3

CQAS-851 Nonparametric Statistics
Registration #0280-851
Distribution-free testing and estimation techniques with emphasis on applications. Topics: sign tests; Kolmogorov-Smirnov statistics; runs tests; Wilcoxon-Mann-Whitney test; chi-square tests; rank correlation; rank order tests; quick tests. (Fund, of Statistics II CQAS-712)

Credit 3

CQAS-853 Managerial Decision Making
Registration #0280-853
Statistical decision analysis for management. Topics: utilities; how to make the best decision (but not necessarily the right one); normal and beta distributions; Bayesian theory; many action problems; optimal sample size; decision diagrams. Applications to marketing; oil exploration; portfolio selection; quality control; production; and research programs. (Bayesian Statistics CQAS-881)

Credit 3

CQAS-856 Interpretation of Data
Registration #0280-856
Advanced topics related to use of statistics in investigational analysis, including: narrow limit gauging, practical design of experiments, analysis of small sample data, analysis of means, identifying assignable causes, and other methods for troubleshooting with statistical methods. (Design of Experiments I CQAS-801)

Credit 3

CQAS-864 Advanced Acceptance
Registration #0280-864 Sampling
An advanced course in acceptance control techniques including: basis of acceptance sampling, attributes plans; variables plans for process parameters; variables plans for proportion nonconforming; sampling schemes including MIL-STD-105D and MIL-STD-414; plans for special applications; rectification and continuous procedures; cumulative results plans; compliance sampling; reliability sampling, and administration of sampling plan. (Statistical Quality Control II, CQAS-731)

Credit 3

CQAS-871 Sampling Theory and
Registration #0280-871 Applications
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. (Fund, of Statistics II, CQAS-712)

Credit 3

QAS-873 **Time Series Analysis**
Registration #0280-873
A methods course in modeling and forecasting of time series with emphasis on model identification, model fitting, and diagnostic checking. Topics: survey of forecasting methods, regression methods, moving averages, exponential smoothing, seasonality, analysis of forecast errors, Box-Jenkins models, transfer function models, case studies. (Regression Analysis I CQAS-841)

Credit 3

CQAS-875 **Empirical Modeling**
Registration #0280-875
A course in model building based on the application of empirical data gathered through appropriate experimental design and analyzed through regression techniques. Topics: response variable construction, experimental design methods, and related analysis techniques. (Design of Experiments II CQAS-802 and Regression Analysis I CQAS-841)

Credit 3

CQAS-881 **Bayesian Statistics**
Registration #0280-881
An introduction to Bayesian statistics and decision making which explores Bayes' Theorem in its relation to classical and Bayesian methodology. Topics: probability, Bayes' Theorem, assessment of prior probabilities and likelihoods, hypothesis testing, and the multivariable case. (Fund, of Statistics II CQAS-712)

Credit 3

CQAS-886 **Sample Size Determination**
Registration #0280-886
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. (Fund, of Statistics II CQAS-712 and Design of Experiments I CQAS-801)

Credit 3

CQAS-891, 892, 893 **Special Topics in**
Registration #0280-891, 892, 893 **Applied Statistics**
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. (Consent of the department)

Credit 3 each course

CQAS-895 **Statistics Seminar**
Registration #0280-895
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. (Consent of all departments involved)

Credit 3

CQAS-896, 897, 898 **Thesis**
Registration #0280-896, 897, 898
Thesis for students working for the MS degree in Applied and Mathematical Statistics for one to nine credits. (Consent of the department)

Credit Variable 1-9

CQAS-899 **Individual Achievement Project**
Registration #0280-899
Research project under faculty supervision for students working for the MS in Applied and Mathematical Statistics. (Consent of the department)

Credit Variable 1-9

Department of Career and Human Resource Development

CHRD-700 **Introduction to Career**
Registration #0290-700 **and Human Resource Development**
As a result of this course, students will better understand the CHRD program and its courses/options as well as related RIT and community resources; better understand the general concepts of human resource development, career development and organizational development as they apply to individuals and groups in a wide variety of settings and structures; and better understand the past, present and future significance of social, economic, technological factors influencing organizations and occupational categories as well as the corresponding role and activities of the human resource professional.

Credit 3

CHRD-705 **Empirical Methods**
Registration #0290-705
This course will enable professionals in the fields of career development, organizational development and human resource development to accurately describe groups of people and their characteristics of interest to career and human resource development (e.g., skills, performance, background, attitudes, etc.). Topics include techniques of empirical investigation, questionnaire and test design, interviewing, and evaluations of training, counseling and development. (Note: following this course, students should take CQAS-701.)

Credit 3

CHRD-710 **Theory of Organizational Development**
Registration #0290-710
This course introduces the student to organizational development theories and their application in an organizational setting. Consideration will be given to the sociological and historical constructs upon which the field is based. Students will become familiar with the philosophical foundations for the key theories, as well as the practical work of the theorists upon which their philosophies are based. This course also will demonstrate how the theories of organizational development can be applied in organizations to foster change, innovation, and the revitalization of the organization.

CHRD-711 **Futures Research and Simulation**
Registration #0290-711
In this course students will learn to understand the techniques, theories, and advantages/limitations of simulation and futures research methods, and the application of simulation and futures research methods for facilitating individual and organizational decision making. (CHRD-710)

Credit 3

CHRD-712 **Planning & Evaluation**
Registration #0290-712 **in Organizational Development**
In this course students will learn to understand the techniques, theories, and advantages/limitations of systematic planning strategies and the application of methods for strategic and tactical planning, and the decision making that assure accountability. (CHRD-710)

Credit 3

CHRD-713 **The Practice of Consultation in OD**
Registration #0290-713
Students will develop an understanding of the various roles that organizational development practitioners play in applying their knowledge and skill in organizational settings, e.g., serving as internal consultants, process consultants, and change agents. Students will learn those skills and practices that pertain to the field of organizational development including: organizational performance analysis, group dynamics, problem solving, intervention techniques, dealing with resistance to change, implementing change, stress management, and approaches that foster employees' acceptance of change and organizational transformation, revitalization and renewal. (CHRD-710)

Credit 3

CHRD-720 Theories of Career Development
Registration #0290-720
Career Development Theories provide mechanisms to examine and define the needs of the work place in relationship to the needs and abilities of the worker. This course will emphasize the structure of selected theories and explore their relationship to the individual's decision-making process.

Credit 3

CHRD-721 Individual Career Counseling Techniques
Registration #0290-721
This course will introduce selected theories and techniques that may be used in individual career counseling situations. Students will practice techniques and develop their own style of career counseling. This course is not meant for individuals seeking to develop clinical therapeutic skills. (CHRD-720)

Credit 3

CHRD-722 Career Counseling Techniques for Groups
Registration #0290-722
This course will introduce students to small group theory and the use of small groups to assist individuals in identifying and implementing their career goals. Students will participate in a small group as they learn and practice group leadership and membership tasks as well as develop career counseling skills. This course is not meant for individuals seeking to develop clinical therapeutic skills. (CHRD-720)

Credit 3

CHRD-723 Information Use in Career Planning
Registration #0290-723
This course will explore the role of information in the educational, work, and leisure aspects of individuals' lifelong career and personal development. Students will be introduced to the following areas that may be useful in the development of career development and planning services: career planning models, selection and use of standardized tests and personal assessment intruments, career information data resources, research issues, and community resources. (CQAS-701, CHRD-720)

Credit 3

CHRD-730 Theories of Human Resource Development
Registration #0290-730
Professionals in the fields of career counseling, organizational development and human resource development require an organized plan of human learning and development. This course presents recent investigations, both theoretical and empirical, into human learning research, and will emphasize the information-processing model of learning and memory. Students will acquire, through readings and group activities, an intellectually consistent basis for the practical procedures of human resource development.

Credit 3

CHRD-731 Techniques of Human Resource Development
Registration #0290-731
This course is designed for future trainers in industrial settings and educators in college and university environments. The course is based on the theory that future trainers and educators must first identify and clarify the value systems within themselves and others prior to organizing a content to be learned. There then must be a self-need assessment by exploring what one knows and must know about learning, curriculum design, information delivery and the assessment of that learning. With this data, the future trainer/educator will seek out the resources to satisfy those needs by mastery of the management of learning principles and skills. With these needs satisfied, the next phase is to create a demonstration of this mastery by developing, facilitating, and evaluating a real course or training experience. The course will provide participants with a model experience that can serve as the basis for developing additional learning/training packages in future work and educational settings. (CHRD-730)

Credit 3

CHRD-732 Design & Development of Training
Registration #0290-732
Students will gain practical experience in human resource development by designing, producing, teaching and evaluating a workshop, seminar or training session. Students will select a needed training module from the broad areas of personal and professional development, skills training and career development and carry out the necessary design, production and delivery steps. Students may take this course more than once in order to gain practical HRD experience and to add competencies to their resumes. (CHRD-730, 731)

Credit 2

CHRD-733 Needs Assessment and
Registration #0290-733 Problem-Solving Techniques
Students will learn techniques to foster innovation and problem solving within organizations, through strategies to help themselves and others define problems, state goals, identify solutions and make decisions. Topics considered will include general systems theory, barriers to creativity, strategic plans, intrapreneuring, product development, and technology-driven worker training. (CHRD-730)

Credit 3

CHRD-750 Microcomputer Applications in CHRD
Registration #0290-750
Professionals in the fields of human resource development and career development make frequent use of computer technology to write proposals, track clients, design training, monitor budgets, evaluate services and produce reports. In this course, students will learn to utilize MS-DOS software for word processing, file management, spreadsheets and communications. After completing this course, students will have a general understanding of these classes of software, be moderately competent using such software and be experienced using this software to produce products appropriate to their intended professions.

Credit 3

CHRD-850 Special Projects
Registration #0290-850
This course provides for independent study, investigation, or research activity in subject matter areas not included in any existing course in the degree program, but having specialized value to students. Proposals approved by a supervising faculty member and the department director are required prior to registration. This course may be taken more than once, but for no more than a total of 6 credit hours.

Credit variable

CHRD-891, 892, 893 Selected Topics
Registration #0290-891, 892, 893
Selected Topics are innovative courses not reflected in the curriculum. Titles will appear in the course listing each quarter. The course may be taken more than once as topics change, but for no more than a total of 6 credit hours.

Credit 3

CHRD-877 Internship
Registration #0290-877
The internship is required of all students* The course consists of two parts: a) at least 20 hours per week of professional experience in appropriate setting, and b) attendance at a seminar that will meet at various times throughout the quarter. Students should meet with their advisors at least two months before planning to take the internship. Proposals for the internship must be approved and on file before registration. *For students with appropriate professional experience, special projects or additional course work may be substituted for the'Internship. Departmental approval is required.

Credit 6

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
Accounting - CBCA					
CBCA-201 0201-201-01 02 05	Financial Accounting (4)	M 6:00-9:50 W 6:00-9:50	M 6:00-9:50 W 6:00-9:50 TELECOURSE	T6:00-9:50 R 6:00-9:50	M 6:00-9:50 W 6:00-9:50 TELECOURSE
CBCA-203 0201-203-01 -02	Managerial Accounting (4)	M 6:00-9:50 W 6:00-9:50	M 6:00-9:50 W 6:00-9:50	M 6:00-9:50 R 6:00-9:50	T 6:00-9:50 R 6:00-9:50
CBCA-207 0201-207-01	Accounting for Engineers 1 (4)	MW 6:30-8:20			
CBCA-208 0201-208-01	Accounting for Engineers II (4)		MW 6:30-8:20		
CBCA-308 0201-308-01	Intermediate Accounting 1 (4)	T6:00-9:50	W 6:00-9:50	M 6:00-9:50	
CBCA-309 0201-309-01	Intermediate Accounting II (4)		T 6:00-9:50	W 6:00-9:50	M 6:00-9:50
Business Law - CBCB					
CBCB-301 0202-301-01	Business Law 1 (4)	M 6:00-9:50	R 6:00-9:50	W6:00-9:50	T 6:00-9:50
CBCB-302 0202-302-01	Business Law II (4)	T 6:00-9:50	M 6:00-9:50	R 6:00-9:50	T 6:00-9:50
CBCB-310 0202-310-01	Legal Environment of Business (4)	R 6:00-9:50	W6:00-9:50	R6:00-9:50	T 6:00-9:50
Data Processing and Systems Analysis - CBCC					
CBCC-321 0203-321-01 -02	Data Processing Principles (4)	R 6:00-9:50 T 6:00-9:50	W 6:00-9:50 R 6:00-9:50	M 6:00-9:50 T 6:00-9:50	T 6:00-9:50
CBCC-322 0203-322-01	Data Processing Systems (4)		W 6:00-9:50	R 6:00-9:50	
CBCC-351 0203-351-01	Basic Programming for Business (2)			W 6:30-8:20	
Finance-CBCD					
CBCD-204 0204-204-01 -05 -12	Personal Financial Management (4) *(WEEKEND COLLEGE II)*	 S 9:00-5:00	 TELECOURSE	 TELECOURSE	R 6:00-9:50
CBCD-304 0204-304-01 -12	Personal Financial Decision Making (4) *(WEEKEND COLLEGE II)*	R 6:00-9:50	 S 9:00-5:00	R 6:00-9:50	
General Management - CBCE					
CBCE-101 0205-101-01	Human Relations 1 (2)	M 12:00-1:50 (City Center) M 6:30-8:20 (City Center)			
CBCE-102 0205-102-01	Human Relations II (2)		M 12:00-1:50 (City Center) M 6:30-8:20 (City Center)		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CBCE-103 0205-103-01	Human Relations III (2)			M 12:00-1:50 (City Center) M 6:30-8:20 (City Center)	
CBCE-200 0205-200-01 -02 -10	Management Process 1 (4) *(WEEKEND COLLEGE 1)*	M 6:00-9:50 T 6:00-9:50 S 9:00-5:00		R 6:00-9:50	
CBCE-201 0205-201-01 -02 -10	Management Process II (4) *(WEEKEND COLLEGE 1)*		M 6:00-9:50 T 6:00-9:50 S 9:00-5:00		R 6:00-9:50
CBCE-202 0205-202-01 -02 -10	Management Process III (4) *(WEEKEND COLLEGE 1)*	R 6:00-9:50		M 6:00-9:50 T 6:00-9:50 S 9:00-5:00	
CBCE-203 0205-203-01	Organization & Management (4)	T 6:00-9:50	M 6:00-9:50	T 6:00-9:50	M 6:00-9:50
CBCE-221 0205-221-01 -10	New Venture Development (4) *(WEEKEND COLLEGE 1)*	M 6:00-9:50	S 9:00-5:00		
CBCE-222 0205-222-01 -10	Small Business Management & Finance <4) *(WEEKEND COLLEGE 1)*		M 6:00-9:50	S 9:00-5:00	
CBCE-223 0205-223-01 -10	Small Business Marketing & Planning (4) *(WEEKEND COLLEGE 1)*			M 6:00-9:50	S 9:00-5:00
CBCE-305 0205-305-01	Customer Relations Systems (4)	T 6:00-9:50		S 9:00-12:50	
CBCE-306 0205-306-01	Customer Service Technology (4)		W 6:00-9:50		MW 6:00-9:50 (1st SESSION)
CBCE-353 0205-353-01	Management Science (4)	W 6:00-9:50	W 6:00-9:50	W 6:00-9:50	W 6:00-9:50
CBCE-298,398 0205-298,398	Special Topics (VARIABLE)				
Marketing-CBCG					
CBCG-210 0207-210-01 -12	Effective Selling (4) *(WEEKEND COLLEGE II)*	S 9:00-5:00	M 6:00-9:50	M 6:00-9:50	MW 6:00-9:50 (1st SESSION)

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CBCG-213 0207-213-01 -12	Advertising Principles (4) *(WEEKEND COLLEGE II)*	W6:00-9:50	W 6:00-9:50	R 6:00-9:50	S 9:00-5:00
CBCG-214 0207-214-01 -12	Advertising Evaluation & Techniques (4) *(WEEKEND COLLEGE II)*		S 9:00-5:00	R 6:00-9:50	
CBCG-361 0207-361-01 -12	Marketing (4) *(WEEKEND COLEGEtO*	R 6.00-9.50	T 6:00-9:50	W 6:00-9:50 S 9:00-5:00	T 6:00-9:50
CBCG-362 0207-362-01	Marketing Practices for the Service Economy (2)	W 8:00-9:50	S 9:00-10:50		
CBCG-398 0207-398-01	Direct Marketing Principles (4)	M 6:00-9:50			
Mathematics and Statistics For Business-CBCH					
CBCH-201 0208-201-01 -02 -03	Mathematics For Business (4)	M 6:00-9:50 T 6:00-9:50 W 6:00-9:50	T 6:00-9:50	R 6:00-9:50	M 6:00-9:50
CBCH-202 0208-202-01 -02 -03	Mathematics For Business (4)	M 6:00-9:50	M 6:00-9:50 T 6:00-9:50 W6:00-9:50	T 6:00-9:50	R 6:00-9:50
CBCH-351 0208-351-01 -02 -03 -04	Business Statistics (4)	T 6:00-9:50 W 6:00-9:50 R 6:00-9:50 S 9:00-12:50	R 6:00-9:50	W 6:00-9:50 S 9:00-12:50	W 6:00-9:50
CBCH-352 0208-352-01 -02 -03 -04	Business Statistics (4)	M 6:00-9:50	T 6:00-9:50 W 6:00-9:50 R 6:00-9:50 S 9:00-12:50	R 6:00-9:50	W 6:00-9:50 S 9:00-12:50
Personnel Administration-CBCI					
CBCI-224 0209-224-01 -12	Interviewing Techniques (4) *(WEEKEND COLLEGE II)*	W 6:00-9:50		M 6:00-9:50 S 9:00-5:00	W 6:00-9:50
CBCI-225 0209-225-01	Recruiting, Training & Supervising Service Industry Personnel (2)		S 11:00-12:50	T 6:00-7:50	
CBCI-229 0209-229-01 -10	Personnel Administration (4) *(WEEKEND COLLEGE 1)*	T 6:00-9:50	T 6:00-9:50 S 9:00-5:00	T 6:00-9:50	T 6:00-9:50
Production Management-CBCJ					
CBCJ-209 0210-209-01	Production Management (4)	M 6:00-9:50		T 6:00-9:50	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CBCJ-305 0210-305-01	Fundamentals of Industrial Engineering 1 (4)	W 6:00-9:50			MW 6:00-9; 50 (1st SESSION)
CBCJ-306 0210-306-01	Industrial Engineering Economy (4)		W 6:00-9:50		MW 6:00-9:50 (2nd SESSION)
Transportation Logistics And Purchasing -CBCL					
CBCL-234 0212-234-01	Introduction to Logistics & Transportation (4)	W 6:00-9:50			
CBCL-239 0212-239-01	Traffic & Transportation Law, Rates, Accounting & Control (4)		% W 6:00-9:50		
CBCL-241 0212-241-01	International Logistics & Transportation (4)	T 6:00-9:50		W 6:00-9:50	
Real Estate-CBCM .					
CBCM-201 0213-201-01	Basic Real Estate Principles (4)	M 6:00-10:20		M 6:00-10:20	
-06		M-F 8:00 AM - 1:00 PM SEPT 12-23 CITY CENTER	S 8:30AM-4:45 PM DEC. 3-JAN.21	M-F 8:00AM 1:00 PM MARCH 6-17 CITY CENTER	T/R 6:00-10:00 JUNE 6-JULY 18
-07		T/R 6:00-10:00 OCT 4-NOV 10	T/R 6:00-10:00 JAN. 10-FEB. 16	T/R 6:00-10:00 APRIL 4-MAY 11	M-F 8:00 AM 1:00 PM JULY 17-28 CITY CENTER
-08		T/W/R 8:00 AM-5:00 PM OCT 11-20 CITY CENTER	M-F 8:00 AM-1:00 PM JAN. 16-27 CITY CENTER	T/W/R 8:00 AM-5:00 PM APRIL 25-MAY 4 CITY CENTER	T/W/R 8:00 AM-5:00 PM AUG 1-10 CITY CENTER
-09		W 8:00 AM 5:00 PM SEPT 7-OCT. 12 CITY CENTER	W 8:00 AM 5:00 PM JAN. 4-FEB. 8 CITY CENTER	W 8:00 AM 5:00 PM MAR 8-APR. 12 CITY CENTER	
CBCM-202 . 0213-202-01	Advanced Real Estate Principles (4)	W 6:00-10:20		M 6:00-10:20	
-06		S 8:30AM 4:45 PM SEPT IO-OCT 15	MW 6:00-10:00 JAN. 9-FEB 15	S 8:30 AM-4:45 PM MAR 11-APR. 15	S 8:30AM-4:45 PM JUNE 3-JULY 8
-07		M-F 8:00 AM-1:00 PM OCT 3-14 CITY CENTER	M-F 8:00 AM-1:00 PM FEB. 13-24 CITY CENTER	M-F 8:00 AM-1:00 PM APR. 3-14 CITY CENTER	T/W/R 8:00 AM-5:00 PM AUG. 1-10 CITY CENTER
-08	.	M-F 6:30-10:30 OCT 17-28 CITY CENTER			
&BCM-203 0213-203-01	Real Estate Investment & Finance (4)	W 6:00-9:40	W 6:00-9:40	W 6:00-9:40	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CBCM-204 0213-204-01	Real Estate Evaluation (4)	SEE QUARTERLY	COURSE SCHEDULE		
Insurance-CBCN					
CBCN-271 0214-271-01	Principles of Insurance I (4)	SEE QUARTERLY	COURSE SCHEDULE		
CBCN-272 0214-272-01	Principles of Insurance II (4)	SEE QUARTERLY	COURSE SCHEDULE		
Interdisciplinary Studies - CIDA					
CIDA-220 0220-220-01	Careers & Credits (2)	R 6:30-8:20		R 6:30-8:20	
Ceramics-CHAC					
CHAC-201 0222-201-80 -81	Introduction to Ceramics (2)	W 6:30-10:20 (City Center) S 10:00 AM -1:50 PM (City Center)	W 6:30-10:20 (City Center) S 10:00 AM -1:50 PM (City Center)	W 6:30-10:20 (City Center) S 10:00 AM -1:50 PM (City Center)	
CHAC-211 0222-211-80 -81	Intermediate Ceramics (2)	S 10:00 AM -1:50 PM (City Center) R 6:30-10:20 (City Center)	S 10:00 AM -1:50 PM (City Center) R 6:30-10:20 (City Center)	S 10:00 AM -1:50 PM (City Center) R 6:30-10:20 (City Center)	
CHAC-295 0222-295-01	Independent Study: Ceramics (Variable)				
CHAC-298 0222-298-01 -02 -03	Ceramic Wheel Throwing Tech. (2) Porcelain Techniques (2) Earthenware Techniques (2)		.		W 6:30-10:20 (City Center) TR 6:30-10:20 (1st SESSION) (City Center) TR 6:30-10:20 (2nd SESSION) (City Center)
CHAC-301 0222-301-80	Advanced Ceramics (2)	R 6:30-10:20 (City Center)	R 6:30-10:20 (City Center)	R 6:30-10:20 (City Center)	
Design-CHAD					
CHAD-201 0223-201-80 -81 -10	Basic Design I (2) (WEEKEND COLLEGE 1)	T 6:30-10:20 W 6:30-10:20 S 9:00-5:00	M 6:30-10:20		MR 6:30-10:20 (1st SESSION)

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHAD-202 0223-202-80 -81 -10	Basic Design II (2) (WEEKEND COLLEGE 1)		T 6:30-10:20 W 6:30-10:20 S 9:00-5:00	M 6:30-10:20	MR 6:30-10:20 (2nd SESSION)
CHAD-202 0223-203-80 -81 -10	Basic Design III (2) (WEEKEND COLLEGE 1)	M 6:30-10:20		T 6:30-10:20 W 6:30-10:20 S 9:00-5:00	MW 6:30-10:20 (1st SESSION)
CHAD-211 0223-211-80	Display Design 1 (2)	R 6:30-10:20			
CHAD-212 0223-212-80	Display Design II (2)		R 6:30-10:20		
CHAD-213 0223-213-80	Display Design III (2)			R 6:30-10:20	
CHAD-215 0223-215-80	Rendering Techniques 1 (2)	T 6:30-10:20			
CHAD-216 0223-216-80	Rendering Techniques II (2)		T 6:30-10:20		
CHAD-217 0223-217-80	Rendering Techniques iII (2)			T 6:30-10:20	
CHAD-218 0223-218-05	Introduction To Designing Home Interiors (2)	TELECOURSE		TELECOURSE	
CHAD-220 0223-220-80	Art For Reproduction (3)	W 6:30-10:20		W 6:30-10:20	TR 6:30-10:20 (1st SESSION)
CHAD-224 0223-224-80	Interior Design 1 (2)		W 6:30-10:20		
CHAD-225 0223-225-80	Interior Design II (2)			W 6:30-10:20	
CHAD-226 0223-226-01	History of Interior Design (2)	T 6:30-8:20			
CHAD-227 0223-227-80	Business Aspects of Environmental Design (2)	NOT OFFERED	IN 1988-89		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHAD-231 0223-231-80	Color Theory In Art (2)		M 6:30-10:20		
CHAD-235 0223-235-80	Commercial Interior Design (2)	R 6:30-10:20			
CHAD-251 0223-251-80	Environmental Design I (2)	NOT OFFERED	IN 1988-89		
CHAD-252 0223-252-80	Environmental Design II (2)	NOT OFFERED	IN 1988-89		
CHAD-253 0223-253-80	Environmental Design III (2)	NOT OFFERED	IN 1988-89		
CHAD-261 0223-261-80	Advanced Design & Typography	M 6:30-10:20			
CHAD-262 0223-262-80	Advanced Design & Typography (2)		M 6:30-10:20		
CHAD-263 0223-263-80	Advanced Design & Typography (2)			M 6:30-10:20	
CHAD-270 0223-270-80	Graphic Communication For the Non-Artist I (3)	M 6:30-10:20			
CHAD-271 0223-271-80	Graphic Communication For the Non-Artist II (3)		M 6:30-10:20		
CHAD-295 0223-295-80	Independent Study: Design (Variable)				
CHAD-298 0223-298-80	Marker Rendering Techniques (2)				TR 6:30-10:20 (2nd SESSION)
CHAD-301 0223-301-80	Advertising I (4)	M 6:30-10:20			
CHAD-302 0223-302-80	Advertising II (4)		M 6:30-10:20		
CHAD-311 0223-311-80	Graphic Design I (2)	NOT OFFERED	IN 1988-89		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHAD-312 0223-312-80	Graphic Design II (2)	NOT OFFERED	IN 1988-89		
CHAD-313 0223-313-80	Graphic Design III (2)	NOT OFFERED	IN 1988-89		
CHAD-315 0223-315-80	Advertising Design 1 (2)	R 6:30-10:20			
CHAD-316 0223-316-80	Advertising Design II (2)		R 6:30-10:20		
CHAD-317 0223-317-80	Advertising Design III (2)			R 6:30-10:20	
CHAD-360 0223-360-80	Portfolio Workshop (2)			W 6:30-10:20	
Fine Art/Drawing - CH AF					
CHAF-201 0224-201-80 -81	Basic Drawing & Media 1 (2)	W 6:30-10:20 R 6:30-10:20	T 6:30-10:20		TR 6:30-10:20 (1st SESSION)
CHAF-202 0224-202-80 -81	Basic Drawing & Media II (2)		W 6:30-10:20 R 6:30-10:20	T 6:30-10:20	TR 6:30-10:20 (2nd SESSION)
CHAF-203 0224-203-80 -81	Basic Drawing & Media III (2)	T 6:30-10:20		W 6:30-10:20 R 6:30-10:20	TR 6:30-10.20 (1st SESSION)
CHAF-207 0224-207-80	Basic Figure Drawing (2)	R 6:30-10:20	R 6:30-10:20	R 6:30-10:20	TR 6:30-10:20 (BOTH SESSIONS)
CHAF-210 0224-210-80	Interpretive Landscape Drawing (2)	NOT OFFERED IN	1988-89		
CHAF-306 0224-306-80	Drawing (2)	W 6:30-10:20	W 6:30-10:20	W 6:30-10:20	
CHAF-307 0224-307-80	Figure Drawing (2)	R 6:30 10:20	R 6:30-10:20	R 6:30-10:20	TR 6:30-10:20 (BOTH SESSIONS)
CHAF-211 0224-211-80	Introduction to Painting (2)	T 6:30-10:20	T 6:30-10:20	T 6:30-10:20	
CHAF-227 0224-227-80	Figure Painting (2)	NOT OFFERED IN	1988-89		
CHAF-301 0224-301-80	Painting (2)	T 6:30-10:20	T 6:30-10:20	T 6:30-10:20	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHAF-337 0224-337-80	Portrait Painting (2)	NOT OFFERED IN	1988-89		
CHAF-341 0224-341-80	Watercolor Painting (2)			R 6:30-10:20	MW 6:30-10:20 (1st SESSION)
Fine Art/Sculpture - CHAF					
CHAF-247 0224-247-80	Sculpture (2)	NOT OFFERED IN	1988-89		
CHAF-357 0224-357-80	Sculpture Workshop (2)	NOT OFFERED IN	1988-89		
Fine Art/Illiustration - CHAF					
CHAF-361 0224-361-80	Illustration (2)	W 6:30-10:20	W 6:30-10:20	W 6:30-10:20	MW 6:30-10:20 (2nd SESSION)
CHAF-362 0224-362-80	Airbrush Techniques (3)	R 6:30-10:20	R 6:30-10:20	- R 6:30-10:20	MW 6:30-10:20 (1st SESSION)
CHAF-263 0224-263-80	Calligraphy (3)	R 6:30-10:20		R 6:30-10:20	
CHAF-363 0224-363-80	Calligraphy Workshop (2)	R 6:30-10:20		R 6:30-10:20	
Fine Art/Printmaking - CHAF					
CHAF-295 0224-295-80	Independent Study: Fine Arts (Variable)				
CHAF-296 0224-296-80	Introduction to Prjntmaking (2)	M 6:30-10:20		M 6:30-10:20	
CHAF-298 0224-298-80	Special Topics: Fine Arts (Variable)				
CHAF-397 0224-397-80	Printmaking Workshop (2)	M 6:30-10:20		M 6:30-10:20	
Metalcrafts & Jewelry - CHAM					
CHAM-201 0225-201-80	Introduction to Metalcrafts & Jewelry (2)	M 6:30-10:20	M 6:30-10:20	M 6:30-10:20	MW 6:30-10:20 (1st SESSION)
CHAM-211 0225-211-80	Intermediate Metalcrafts & Jewelry (2)	M 6:30-10:20	M 6:30-10:20	M 6:30-10:20	MW 6:30-10:20 (1st SESSION)
CHAM-295 0225-295-80	Independent Study: Metalcrafts/Jewelry (Variable)				

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHAM-298 0225-298-80	Special Topics: Metalcrafts/Jewelry (Variable)				
CHAM-301 0225-301-80	Advanced Metalcrafts & Jewelry (2)	M 6:30-10:20	• M 6:30-10:20	M 6:30-10:20	MW 6:30-10:20 (1st SESSION)
Weaving/Textiles - CHAT					
CHAT-201 0226-201-80	Introduction to Weaving (2)	M 6:30-10:20 (City Center)	M 6:30-10:20 (City Center)	M 6:30-10:20 (City Center)	
CHAT-211 0226-211-80	Intermediate Weaving (2)	M 6:30-10:20 (City Center)	M 6:30-10:20 (City Center)	M 6:30-10:20 (City Center)	
CHAT-215 0226-215-80	Textile Design (2)	NOT OFFERED IN	1988-89		
CHAT-295 0226-295-80	Independent Study: Weaving/Textiles (Variable)				
CHAT-298 0226-298-80	Special Topics: Weaving/Textiles Personalized Weaving Project (Variable)				TR 6:30-10:20 (BOTH SESSIONS) (City Center)
CHAF-301 0226-301-80	Advanced Weaving (2)	M 6:30-10:20 (City Center)	M 6:30-10:20 (City Center)	M 6:30-10:20 (City Center)	
Woodworking - CHAW					
CHAW-201 0227-201-80	Introduction to Woodworking (2)	M 6:30-10:20	M 6:30-10:20	M 6:30-10:20	TR 6:30-10:20 (BOTH SESSIONS)
CHAW-211 0227-211-80	Intermediate Woodworking (2)	W 6:30-10:20	W 6:30-10:20	W 6:30-10:20	TR 6:30-10:20 (BOTH SESSIONS)
CHAW-295 0227-295-80	Independent Study: Woodworking (Variable)				
CHAW-298 0227-298-80	Special Topics: Woodworking (Variable)				
CHAW-301 0227-301-80	Advanced Woodworking	W 6:30-10:20	W 6:30-10:20	W 6:30-10:20	TR 6:30-10:20 (BOTH SESSIONS)
Photography - CHGP					
CHGP-021 0231-021-40 -10	Introduction to Photography (0) *WEEKEND COLLEGE!*	S 9:00-5:00	T 6:00-9:50		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGP-101 0231-101-40 -41 -10	Photography Workshop (2) *WEEKEND COLLEGE 1*	T 6:00-9:50	T 6:00-9:50 S 9:00-5:00	T 6:00-9:50	TR 6:00-9:50 (1st SESSION) TR 6:00-9:50 (2ND SESSION)
CHGP-102 0231-102-40 -41 -10	Photography Workshop (2) *WEEKEND COLLEGE 1*	T 6:00-9:50	T 6:00-9:50	T 6:00-9:50 S 9:00-5:00	TR 6:00-9:50 (1st SESSION) TR 6:00-9:50 (2nd SESSION)
CHGP-104 0231-104-40 -41 -10	Color Photography Workshop (2) *WEEKEND COLLEGE 1*	T 6:00-9:50 S 9:00-5:00	T 6:00-9:50	T 6:00-9:50 S 9:00-5:00	TR 6:00-9:50 (1st SESSION) TR 6:00-9:50 (2nd SESSION)
CHGP-201 0231-201-01	Basic Professional Photography (4)	M 6:30-8:20 W 6:00-9:50 (STUDIO)			
CHGP-202 0231-202-01	Basic Professional Photography (4)		M 6:30-8:20 W 6:00-9:50 (STUDIO)		
CHGP-203 0231-203-01	Basic Professional Photography			M 6:30-8:20 W 6:00-9:50 (STUDIO)	
CHGP-211 0231-211-01	Color Photography (4)	M 6:30-8:20 W 6:00-9:50 (STUDIO)			
CHGP-212 0231-212-01	Color Photography		M 6:30-8:20 W 6:00-9:50 (STUDIO)		
CHGP-213 0231-213-01	Color Photography			M 6:30-8:20 W 6:00-9:50 (STUDIO)	
CHGP-221 0231-221-01	Illustrative Photography (3)	W 6:00-9:50	W 6:00-9:50	W 6:00-9:50	
CHGP-222 0231-222-01	Illustrative Photography (3)		W 6:00-9:50	W 6:00:9:50	
CHGP-223 0231-223-01	Illustrative Photography (3)			W 6:00:9:50	
CHGP-231 0231-231-40	Portrait Photography	R 6:00:9:50 (LEC/STUDIO)	R 6:00-9:50 (LEC/STUDIO)	R 6:00-9:50 (LEC/STUDIO)	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGP-232 0231-232-40	Portrait Photography (3)		R 6:00-9:50 (LEOSTUDIO)	R 6:00-9:50 (LEOSTUDIO)	
CHGP-233 0231-233-40	Portrait Photography (3)			R 6:00-9:50 (LEOSTUDIO)	
CHGP-241 0231-241-40	Commercial Photography	W 6:00.9:50 (LEC/STUDIO)	W 6:00-9:50 (LEOSTUDIO)	W 6:00-9:50 (LEOSTUDIO)	
CHGP-242 0231-242-40	Commercial Photography		W 6:00-9:50 (LEOSTUDIO)	W 6:00-9:50 (LEOSTUDIO)'	
CHGP-243 0231-243-40	Commercial Photography (3)			W 6:00-9:50 (LEOSTUDIO)	
CHGP-295 0231-295-05	Photographic Visions I (2)	NOT OFFERED IN	1988-89		
CHGP-298 0231-298-05	Photographic Visions II (2)	NOT OFFERED IN	1988-89		
CHGP-301 0231-301-01	Motion Picture (3)	NOT OFFERED IN	1988-89		
CHGP-302 "0231-302-01	Motion Picture (3)	NOT OFFERED IN	1988-89		
CHGP-321 0231-321-40	Retouching Commercial (1)	W 6:00-7:50 (LAB)	W 6:00-7:50 (LAB)	W 6:00-7:50 (LAB)	
CHGP-322 0231-322-40	Retouching Commercial (1)		W 6:00-7:50 (LAB)	W 6:00-7:50 (LAB)	
CHGP-323 0231-323-40	Retouching Commercial (1)			W 6:00-7:50 (LAB)	
CHGP-331 0231-331-40	Retouching Portrait (1)	W 6:00-7:50 (LAB)	W 6:00-7:50 (LAB)	W 6:00-7:50 (LAB)	
CHGP-332 0231-332-40	Retouching Portrait (1)		W 6:00-7:50 (LAB)	W 6:00:7:50 (LAB)	
CHGP-333 0231-333-40	Retouching Portrait (1)			W 6:00:7:50 (LAB)	
CHGP-351 0231-351-01	Industrial Photography Instrumentation (3)	W 6:00-9:50 (LEC/LAB)	W 6:00-9:50 (LEOLAB)	W 6:00-9:50 (LEC/LAB)	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGP-353 0231-353-40	Industrial Photography Special Topics (3)	GUIDED IN	JEPENDENT STUDY		
CHGP-253 0231-353-41	Industrial Photography High Contrast Tone Derivations (3)	R 6:00-9:50 (LEC/LAB)	R 6:00-9:50 (LEC/LAB)	R 6:00-9:50 (LEC/LAB)	
CHGP-361 0231-361-40	Law Enforcement Photography (3)	R 4:00-9:50 (LEOtAB)	R 6:00-9:50 (LEC/LAB)		
CHGP-362 0231-362-40	Law Enforcement Photography		R 6:00-9:50 (LEC/LAB)		
CHGP-366 0231-366-40	Dye Transfer Printing		M 6:00-9:50 (LEC/LAB)	M 6:00-9:50 (LEC/LAB)	
CHGP-401 0231-401-40	Fashion Photography	R 6:00-9:50 (LEC/LAB)	R 6:00-9:50 (LEC/LAB)	R 6:00-9:50 (LEC/LAB)	
CHGP-402 0231-402-40	Fashion Photography		R 6:00-9:50 (LEC/LAB)	R 6:00-9:50 (LEC/LAB)	
CHGP-403 0231-403-40	Fashion Photography (3)			R 6:00-9:50 (LEC/LAB)	
CHGP-404 0231-404-40	Architectural Photography (3)	R 8:00-10:20 (INDEPENDENT FIE	DTRIP)	R 8:00-10:20 (INDEPENDENT FIEL	) TRIP)
CHGP-411 0231-411-40	Photography of The Natural World (4)	NOT OFFERED IN	988-89		
CHGP-431 0231-431-40	Photographic Communication (2)	NOT OFFERED IN	1988-89		
CHGP-432 0231-432-40	Photographic Communication (2)	NOT OFFERED IN	1988-89		
CHGP-433 0231-433-40	Photographic Communication (2)	NOT OFFERED IN	1988-89		
International Studies - CHGI					
CHGI-211 0233-211-01	Chinese Language and Culture: China and the Chinese People (4)	NOT OFFERED IN	1988-89		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGI-212 0233-212-01	Chinese Language and Culture: Chinese Communism: Ideology and Practice (4)	NOT OFFERED IN	1988-89		
CHGI-213 0233-213-01	Chinese Language and Culture: Contemporary Issues (4)	NOT OFFERED IN	1988-89		
CHGI-221 0233-221-05	Japan: The Changing Tradition (4)	NOT OFFERED IN	1988-89		
Deaf Studies -CHCD					
CHCD-211 0234-211-01	Sign Language & Communication Systems 1 (2)	M 6:00-8:50	M 6:00-8:50	W 6:00-8:50	T 6:00-8:50
CHCD-212 0234-212-01	Sign Language & Communication Systems II (2)	W 6:00-8:50	M 6:00-8:50		TR 6:00-8:50 (1st SESSION)
CHCD-213 0234-213-01	Sign Language & Communication Systems III (2)		W 6:00-8:50	M 6:00-8:50	TR 6:00-8:50 (2nd SESSION)
CHCD-241 0234-241-01	Aspects & Issues of Deafness 1 (3)	W 6:00-8:50			
CHCD-242 0234-242-01	Aspects & Issues of Deafness II (3)		W 6:00-8:50		
CHCD-311 0234-311-01	American Sign Language 1 (2)	NOT OFFERED IN	1988-89		
CHCD-312 0234-312-01	American Sign Language II (2)	NOT OFFERED IN	1988-89		
Humanities - CHGH					
CHGH-201 0235-201-01	Humanities (4)	M 6:00-9:50			
CHGH-202 0235-202-01	Humanities (4)		M 6:00-9:50		
CHGH-203 0235-203-01	Humanities (4)			M 6:00-9:50	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGH-207 0235-207-05	American Politics (4)	TELECOURSE			
CHGH-210 0235-210-01	Introduction to Art Appreciation (4)		T 6:00-9:50	T 6:00-9:50	
CHGH-230 0235-230-01	Introduction to Music Appreciation (4)	T 6:00-9:50		W 6:00-9:50	
CHGH-260 0235-260-01 -02 -05 -10 -12	Introduction to Literature (4) *WEEKEND COLLEGE 1* *WEEKEND COLLEGE II*	M 6:00-9:50 T 6:00-9:50	TR 6:30-8:20	W 6 00-9:50 TELECOURSE S 9:00-5:00	T 6:00-9:50 S 9:00-5:00
CHGH-270 0235-270-01 -12	Introduction ^ to Philosophy (4) *WEEKEND COLLEGE II*	MW 8:30-1:20 S 9:00-5:00	T 6:00-9:50	M 6:00-9:50	R 6:00-9:50
CHGH-323 0235-323-01 -10	Modern Europe (3) *WEEKEND COLLEGE1*	S 9:00-5:00	R 6:00-9:50	T 6:00-9:50	W 6:00-9:50
CHGH-326 0235-326-01 -05 -12	Modern America (4) *WEEKEND COLLEGE II*	MW 8:30-10:20 TELECOURSE	T 6:00-9;50 S 9:00-5:00	T 6:00-9:50 TELECOURSE	R 6:00-9:50 S 9:00-5:00
CHGH-340 0235-340-01 -05	Values and Experience (4)	W 6:00-9:50		TELECOURSE	
CHGH-341 0235-341-01	Symbols, Behavior, Culture & Technology (4)		W 6:00-9:50		
CHGH-342 0235-342-01	Dimensions of Science (4)			T 6:00-9:50	
CHGH-359 0235-359-01	Contemporary Moral Problems (4)	R 6:00 9:50		T 6:00-9:50	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGH-298 0235-298	Special Topics: Humanities (Variable)				
Communications - CHGL					
CHGL-120 0236-120-01	Basic Communications (1)	S 9:00-11:50			MW 5:30-8:20 (2nd SESSION)
CHGL-204 0236-204-01	Dynamic Communications 1 (4)	S 9:00-12:50	S 9:00-12:50	S 9:00-12:50	W 5:30-9:20
CHGL-205 0236-205-01 -02	Dynamic Communications II (4)	S 9:00-12:50 MW 6:30-8:20	S 9:00-12:50 MW 6:30-8.20	S 9:00-12:50 MW 6:30-8:20	W 5:30-9:20
CHGL-206 0236-206-01	Vocabulary (1)	NOT SCHEDULED (INTERESTED STUD	1988-89 ENTS SHOULD CONTAC	T CHAIRPERSON)	
CHGL-220 0236-220-01 -02 -05	Communications (4)	S 9:00-12:50 MW 6:30-8:20 TELECOURSE	S 9:00-12:50 MW 6:30-8:20 TELECOURSE	S 9:00-12:50 MW 6:30-8:20 TELECOURSE	W 5:30-9:20
CHGL-301 0236-301-01 -12	Professional Presentations (4) *WEEKEND COLLEGE II*	T 6:00-9:50	W 6:00-9:50	 S 9:00-5:00	TR 6:30-9:20
CHGL-302 0236-302-01 -12	Discussion Skills & Leadership (4) *WEEKEND COLLEGE II*	M 6:30:10:20	 S 9:00-5:00	R 6:00-9:50	TR 6:30-10:20 (2nd SESSION)
CHGL-307 0236-307-01 -05 -12	Communicating in Business (4) *WEEKEND COLLEGE II*	 S 9:00-5:00	 TELECOURSE	MW 6:30-8:20	 TELECOURSE
CHGL-308 0236-308-01	Technical Report Writing		W 5:30-9:20 (CITY CENTER)		W 5:30-9:20
CHGL-323 0236-323-01	Technical Writing and Editing (4)	M 6:00-9:50 (CITY CENTER)			
CHGL-324 0236-324-01	Research Techniques (4)	W 6:00-7:50 (CITY CENTER)			
CHGL-325 0236-325-01	Instructional Design Principles (2)		W 6:00-7:50 (CITY CENTER)		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGL-326 0236-326-01	Document Design (2)		M 6:00-7,50 (CITY CENTER)		
CHGL-327 0236-327-01	Practicum: Designing Manuals (2)		M 8:00-9:50 (CITY CENTER)		
CHGL-328 0236-328-01	Writing in the Sciences (2)				M 8:00-9:50
CHGL-329 0236-329-01	Oral Skill Technical Communications (2)			M 8:00-9:50 (CITY CENTER)	
CHGL-330 0236-330-01	Communicating Online (2)			W 6:00-7:50 (CITY CENTER)	
CHGL-331 0236-331-01	Promotional Writing			M 6:00-7:50 (CITY CENTER)	
CHGL-332 0236-332-01	Managing The Project (2)				W 6:00-7:50
CHGL-333 0236-333-01	Audiovisual Presentations (2)				M 6:00-7:50'
CHGL-340 0236-340-01	Interpersonal Communication For Customer Service (4)	S 9:00-12:50			MW 6:00-9:50 (2nd SESSION)
CHGL-360 0236-360-01 -10	Intro. To Public Relations (2) *WEEKEND COLLEGE 1*	W 6:30-8:20 S 9:00-12:50			
CHGL-365 0236-365-01 -10	Writing for The Organ. 1 (2) *WEEKEND COLLEGE 1*	W 8:30-10:20 S 1:00-5:00			
CHGL-366 0236-366-01 -10	Writing for The Organ. II *WEEKEND COLLEGE 1*		W 8:30-10:20 S 1:00-5:00		
CHGL-367 0236-367-01	Scripting & Speechwriting (4)				M 6:00-9:50

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGL 298,398 0236-298,398	Special Topics: Communications (VARIABLE)				
Social Sciences - CHGS					
CHGS-201 0237-201-01 -12	Anthropology (4) *WEEKEND COLLEGE II*	T 6:00-9:50		W 6:00-9:50	 S 9:00-5:00
CHGS-211 0237-211-01 -02 -05 -12	Psychology: Introduction (4) *WEEKEND COLLEGE II*	TR 6:30-8:20 W 6:00-9:50 S9:00-5:00	MW 8:30-10:20 S 9:00-12:50 TELECOURSE	M 6:00-9:50 TELECOURSE	T 6:00-9:50 S 9:00-5:00
CHGS-221 0237-221-01 -02 -05 -12	Principles of Economics I (4) *WEEKEND COLLEGE II*	MW 6:30-8:20 T 6:00-9:50 TELECOURSE	 W 6:00-9:50 S 9:00-5:00	MW 6:30-8:20 R 6:00-9:50 TELECOURSE	TR 6:00-9:50 (1st SESSION)
CHGS-222 0237-222-01 -02 -05 -12	Principles of Economics II (4) " *WEEKEND COLLEGE II*	M 6:00-9:50 MW 6:30-8:20 S 9:00-5:00	R 6:00-9:50 TELECOURSE	W 6:00-9:50 S 9:00-5:00	R 6:00-9:50 TR 6:00-9:50 (2nd SESSION) TELECOURSE
CHGS-223 0237-223-01 -12	Principles of Economics III (4) *WEEKEND COLLEGE II*	R 6:00-9:50	%	T 6:00-9:50	 S 9:00-5:00
CHGS-227 0237-227-01	New Service Economy (2)	W 6.00-7:50		T 8:00-9:50	
CHGS-231 0237-231-01 -05 -10 -12	Sociology: Introduction (4) *WEEKEND COLLEGE 1* *WEEKEND COLLEGE II*	T 6:00-9:50 TELECOURSE	T 6:00-9:50 R S 9:00-5:00	T 6:00-9:50 TELECOURSE	W 6:00-9; 50 S 9:00-5:00

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGS-261 0237-261-01 -10	Political Science Introduction (4) *WEEKEND COLLEGE 1*	« M 6:00-9:50	T 6:00-9:50	 S 9:00-5:00	R 6:00-9:50
CHGS-316 0237-316-01 -10	Psychology: Behavior in Industry (4) *WEEKEND COLLEGE 1*	T 6:00-9:50	 S9'.00-5:00	R 6:00-9:50	 S 9:00-5:00
CHGS-317 0237-317-01 -12	Psychology of Stress & Adjustment (4) *WEEKEND COLLEGE II*	 S 9:00-5:00	M 6:00-9.50		 S 9:00-5:00
CHGS-320 0237-320-01 -12	Psychology of Persuasion (2) *WEEKEND COLLEGE 1*		W 6:30-8:20 S 9:00-12:50		T 6:00-7:50
CHGS-298 0237-298-01	Special Topics: Behavioral Science (VARIABLE)				
Photographic Science - CHGR					
CHGR-207 0238-207-01	Fundamentals of Photo Science (4)	M 6:00-8:20 W 6:00-9:20 (LAB)			
CHGR-208 0238-208-01	Fundamentals of Photo Science (4)		M 6:00-8:20 W 6:00-9:20 (LAB)		
CHGR-209 0238-209-01	Fundamentals of Photo Science (4)			M 6:00-8:20 W 6:00-9:20 (LAB)	
CHGR-217,218,21 0238-217 218,219-01	Photographic Chemistry (3)	NOT OFFERED INI	>88-89		
CHGR-224,225,22(0238-224 225,226-40	Photographic Lab (1)	NOT OFFERED IN 1	188-89		
CHGR-227 0238-227-01	Black & White Sensitometry (4)	NOT OFFERED IN 1	>88-89		
CHGR-228 0238-228-01	Black & White Sensitometry (4)	NOT OFFERED IN 1	188-89		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGR-229 0238-229-01	Black & White Sensitometry (4)	NOT OFFERED IN 1	188-89		
CHGR-237 0238-237-01	Radiometry (3)	T 5:30-8:20			
CHGR-238 0238-238-01	Radiometry (3)		T 5:30-8:20		
CHGR-307 0238-307-01	Quality Control of Photographic Solutions (3)	NOT OFFERED IN 1	188-89		
CHGR-407 0238-407-01	Optics (3)	W 5:30-8.20			
CHGR-408 0238-408-01	Optics (3)		W 5:30-8:20		
CHGR-409 0238-409-01	Optics (3)			W 5:30-8:20	
CHGR-414 0238-414-01	Color Sensitometry (3)	NOT OFFERED IN 1	188-89		
CHGR-415 0238-415-01	Color Sensitometry (3)	NOT OFFERED IN 1	188-89		
CHGR-416 0238-416-01	Color Sensitometry (4)	NOT OFFERED IN 1	>88-89		
CHGR-417 0238-417-01	Image Evaluation (3)	NOT OFFERED IN 1	188-89		
CHGR-418 0238-418-01	Image Evaluation (3)	NOT OFFERED IN 1	188-89		
CHGR-419 0238-419-01	Image Evaluation (3)	NOT OFFERED IN 1	>88-89		
CHGR-421 0238-421-01	Math Methods in Photo Science (4)			R 5:30-9:20	
CHGR-520 0238-520-01	Xerography & Electrography (3)	R 5:30-8:20			
CHGR-527 0238-527-01	Theory of Photo Process (4)	W 5:30-8:20			

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGR-528 0238-528-01	Theory of Color Process (4)		W 5:30-9:20		
CHGR-529 0238-529-01	Non-Silver Imaging Systems (4)			W 5:30-9:20	
CHGR-557 0238-557-01	Independent Research (3)				
CHGR-558 0238-558-01	Independent Research (3)				
CHGR-559 0238-559-01	Independent Research (3)				
Printing - CHGT					
CHGT-101 0239-101-40	Process Camerawork (2)	(Substitute: 0239	301, Reproduction Cam	srawork, For Diploma	Program)
CHGT-102 0239-102-40	Process Camerawork (2)	(Substitute: 0239	302, Reproduction Cam	srawork, For Diploma	Program)
CHGT-103 0239-103-40	Process Camerawork (2)	(Substitute: 0239	303, Reproduction Carr	erawork. For Diplom<	Program)
CHGT-111 0239-111-40	Color Separation Camerawork (2)	M 6:30-9:20			
CHGT-112 0239-112-40	Color Separation Camerawork (2)		M 6:30-9:20		
CHGT-113 0239-113-40	Color Separation Camerawork (2)			M 6:30-9:20	
CHGT-121 0239-121-40	Offset Layout & Stripping (2)	(Substitute: CHGT;	21, Offset Film Assemb	V)	
CHGT-122 0239-122-40	Offset Layout & Stripping (2)	(Substitute: CHGT;	22, Offset Film Assemb	y)	
CHGT-123 0239-123-40	Offset Layout & Stripping (2)	(Substitute: CHGT;	23, Offset Film Assemb	V)	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGT-131 0239-131-40	Offset Platemaking (2)	NOT OFFERED IN 1	188-89		
CHGT-132 0239-132-40	Offset Platemaking (2)	NOT OFFERED IN 1	188-89		
CHGT-141 0239-141-40	Offset Presswork (2)	R 7:00-9:50			
CHGT-142 0239-142-40	Offset Presswork (2)		R 7:00-9:50		
CHGT-143 0239-143-40	Offset Presswork (2)			R 7:00-9:50	
CHGT-151 0239-151-40	Color Stripping (2)	NOT OFFERED IN 1	188-89		
CHGT-152 0239-152-40	Color Stripping (2)	NOT OFFERED IN 1!	88-89		
CHGT-153 0239-153-40	Color Stripping (2)	NOT OFFERED IN 1	188-89		
CHGT-201 0239-201-01	Introduction To Printing (2)	M 6:30-8:20			
CHGT-202 0239-202-01	Introduction To Printing (2)		t M 6:30-8:20		
CHGT-203 0239-203-01	Introduction To Printing (2)			M 6:30-8:20	
CHGT-207 0239-207-01	Printing Design & Layout (3)	T 6:30-9:20			
CHGT-211 0239-211-40	Photo-Typesetting (2)	NOT OFFERED IN 1!	88-89		
CHGT-215 0239-215-40	Bookbinding (2)	NOT OFFERED IN 1	(88-89		
CHGT-219 0239-219-01	Estimating (4)		T 6:00-9:50		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHGT-221 0239-221-01 -10	Offset Film Assembly (3)	R 6:00-9:50 S 9:00-5:00			
CHGT-222 0239-222-01	Offset Film Assembly (3)		R 6:00-9:50		
CHGT-223 0239-223-01	Offset Film Assembly (3)			R 6:00-9:50	
CHGT-227 0239-227-01	Copy Preparation (3)			R 6:30-9:20	
CHGT-231 0239-231-40	Printing Plates (2)	NOT OFFERED IN 1	188-89		
CHGT-232 0239-232-40	Printing Plates (2)	NOT OFFERED IN 1	188-89		
CHGT-237 0239-237-01	Technology of Typesetting (2)	W 6:30-8:20			
CHGT-241 0239-241-01	Typography			T 6:30-8:20	
CHGT-251 0239-251-01	Paper & Printing		T 6:30-8:20		
CHGT-252 0239-252-01	Paper & Printing (2)			T 6:30-8:20	
CHGT-301 0239-301-40	Reproduction Camerawork (2)	W 6:30-9:20			
CHGT-302 0239-302-40	Reproduction Camerawork (2)		W 6:30-9:20		
CHGT-303 0239-303-40	Reproduction Camerawork (2)			W 6:30-9:20	
CHGT-314 0239-314-40	Flexography	NOT OFFERED IN 1	>88-89		
CHGT-317 0239-317-01	Computer Applications in Printing (2)	NOT OFFERED IN 1	188-89		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTBE-402,407 0241-402-01 0241-407-40	Circuit Analysis (3) Lab (1)		MW 6:00-7:50 R 6:00-8:50		
CTBE-403,408 0241-403-01 0241-408-41	Circuit Analysis (3) Lab (1)		Contact Dept.		
CTBE-411 0241-411-01	Electric 8t Magnetic Fields (4)		Contact Dept.		
CTBE-412 0241-412-01	Electric & Magnetic Fields (4)		Contact Dept.		
CTBE-413 0241-413-01	Electric & Magnetic Fields (4)		Contact Dept.		
CTBE-421 0241-421-01	Electronics (4)	MW 6:30-8:20			
CTBE-422 0241-422-01	Electronics (4)		MW 6:30-8:20		
CTBE-423 0241-423-01	Electronics (4)		-	MW 6:30-8:20	
CTBE-431 0241-431-01	Electronics (4)		Contact Dept.		
CTBE-432 0241-432-01	Electronics (4)		Contact Dept.		
CTBE-433 0241-433-01	Electronics (Comm) (4)		Contact Dept.	-	
CTBE-434 0241-434-01	Digital Logic Design (4)			MW 6:30-8:20	
CTBE-461 0241-461-01	Electrical Engineering Principles (4)	MW 6:00-7:50			
CTBE-462 0241-462-01	Electrical Engineering Principles (4)		MW 6:00-7:50		
CTBE-463 0241-463-01	Electrical Engineering Principles (4)			MW 6:00-7:50	
CTBE-501 0241-501-01	Electromagnetic Energy Conversion (4)		Contact Dept.		
CTBE-511 0241-511-01	Control Systems (4)		Contact Dept.		
CTBE-512 0241-512-01	Control Systems (4)		Contact Dept.		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
Mechanical - CTBM					
CTBM-341 0242-341-01 -02	Engineering Mechanics (Statics) (4)	MW 6:30-8:20 MW 6:30-8:20	TR 6:30-8:20		
CTBM-342 0242-342-01 -02	Engineering Mechanics (Dynamics) (4)		MW 6:30-8:20 MW 6:30-8:20	TR 6:30-8:20	
CTBM-344, 354 0242-344-01 0242-354-40 -41	Strength of Materials (3) Lab (1)		MW 8:30-9:50 R 6:30-8:20 R 8:30-10:20		
CTBM-345 0242-345-01	Strength of Materials (4)			MW 8:30-10:20	
CTBM-401 0242-401-01	Thermodynamics (4)	TR 6:30-8:30			
CTBM-402 0242-402-01	Thermodynamics (4)		TR 6:30-8:30		
CTBM-403 0242-403-01	Thermodynamics (4)		NOT OFFERED IN	988-89	
CTBM-411 0242-411-01	Fluid Mechanics (4)		NOT OFFERED IN	988-89	
CTBM-412 0242-412-01	Fluid Mechanics (4)		NOT OFFERED IN	988-89	
CTBM-551 0242-551-01	Machine Design (3)	TR 8:30-10:20			
CTBM-552 0242-552-01	Machine Design (3)		TR 8:30-10.20		
CTBM-553 0242-553-01	Machine Design (3)			TR 8:30-10:20	
Applied Science - Chemistry - CTCC					
CTCC-211 0244-211-01	General Chemistry (3)	MW 7:00-8:20			
CTCC-212 0244-212-01	General Chemistry (3)		MW 7:00-8:20		
CTCC-213 0244-213-01	General Chemistry (3)			MW 7:00-8:20	
CTCC-216 0244-216-01	Qualitative Inorganic Analysis (2)			R 6:00-9:50 LEC/LAB	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTCC-217 0244-217-01	Quantitative Analysis (2)	R 6:00-9:50 LEC/LAB			
CTCC-218 0244-218-01	Quantitative Analysis (2)		R 6:00-9:50 LEC/LAB		
CTCC-231 0244-231-01	Organic Chemistry (3)	MW 7:00-8:20			
CTCC-232.237 0244-232-01 0244-237-40	Organic Chemistry Lecture (3) Lab (2)		MW 7:00-8:20 R 6:00-9:50		
CTCC-233.238 0244-233-01 0244-238-40	Organic Chemistry Lecture (§) Lab (2)			MW 7:00-8:20 R 6:00-9:50	
CTCC-241,246 0244-241-01 -02 0244-246-40 -41 -42 -43	Engineering Chemistry Lecture (3) Lab(1)	MW 7:00-8:20 TR 7:00-8:20 M 8:30-10:20 R 8:30-10:20 M 8:30-10:20 R 8:30-10:20			
CTCC-242, 247 0244-242-01 -02 0244-247-40 -41 -42 -43	Engineering Chemistry Lecture (3) Lab (1)		MW 7:00-8:20 TR 7:00-8:20 M 8:30-10:20 R 8:30-10:20 M 8:30-10:20 R 8:30-10:20		
CTCC-243,248 0244-243-01 -02 0244-248-40 -41 -42 -43	Engineering Chemistry Lecture (3) Lab (1)			MW 7:00-8:20 TR 7:00-8:20 M 8:30-10:20 R 8:30-10:20 M 8:30-10:20 R 8:30-10:20	
CTCC-311,316 0244-311-01 0244-316-40	Analytical Chemistry Instrumental Analysis Lecture (3) Lab (2)	MW 7:00-8:20 R 6:00-9:50			
CTCC-312,317 0244-312-01 0244-317-40	Analytical Chemistry Separations Lecture(3) Lab (2)		MW 7:00-8:20 R 6:00-9:50		
CTCC-313 0244-313-01	Introduction to Physical Chemistry (3)			MW 7:00-8:20	
CTCC-401,405 0244-401-01 0244-405-40	Physical Chemistry Lecture (3) Lab (2)	MW 7:00-8:20 MW 6:00-6:50			

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTCC-402,406 0244-402-01 0244-406-40	Physical Chemistry Lecture (3) Lab (2)		MW 7:00-8:20 MW 6:00-6:50		
CTCC-403,407 0244-403-01 0244-407-40	Physical Chemistry Lecture (3) Lab (2)			MW 7:00-8:20 MW 6:00-6:50	
CTCC-417 0244-417-01	Chemical Literature & Technical Writing	MW 8:30-10:20			
CTCC-511 0244-511-01	Instrumental Analysis (4)	TR 6:30-8:20			
CTCC-512 0244-512-01	Instrumental Analysis (4)		TR 6:30-8:20		
CTCC-521 0244-521-01	Synthetic Organic Chemistry (3)	MW 8:30-9:50			
CTCC-522 0244-522-01	Physical Organic Chemistry (3)		MW 8:30-9:50		
CTCC-523 0244-523-01	Advanced Topics in Organic Chemistry (3)			MW 8:30-9:50	
CTCC-525,535 0244-525-01 0244-535-40	Qualitative Organic Analysis Lecture (1) Lab (2)			MW 8:30-9:50 R 6:00-9:50	
CTCC-528 0244-528-01	Organic Chemistry of Polymers (3)			TR 7:00-8:20	
CTCC-551 0244-551-01	Inorganic Chemistry (4)			TR 6:30-8:20	
CTCC-555 0244-555-01	Biochemistry (3)			MW 8:30-9:50	
CTCC-561 0244-561-01	Surface and Colloid Chemistry (3)		MW 8:30-9:50		
CTCC-562 0244-562-01	Photo-Chemistry (3)	MW 8:30-9:50			

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTCC-563 0244-563-01	Chemical Thermodynamics (3)	NOT OFFE tED 1988-89			
CTCC-565 0244-565-01	i Chemical Kinetics (3)	NOT OFFE *ED 1988-89			
CTCC-598 0244-598-01	Topics in Chemistry: Spectrometric Identification of Organic Compounds (3)				MW 7:00-8:20
acc-599 0244-599-01	Independent Study: Chemistry Credits (1-3)	TBA	TBA	TBA	TBA
College Physics - CTCP					
CTCP-201, 206 0245-201-01 -02 0245-206-40 -41 -42 -43 -44 -45	College Physics Lecture (3) (Lab(1)	MW 8:30-9:50 TR 7:00-8:20 M 6:30-8:20 M 8:30-10:20 R 6:30-8:20 R 8:30-10:20 T 8:30-10:20			
CTCP-202,207 0245-202-01 -02 0245-207-40 -41 -42 -43 -44 -45	College Physics Lecture (3) (Lab(1>		MW 8:30-9:50 TR 7:00-8:20 M 6:30-8:20 M 8:30-10:20 R 6:30-8:20 R 8:30-10:20 T 8:30-10:20		
CTCP-203, 208 0245-203-01 -02 0245-208-40 -41 -42 -43 -44 -45	College Physics Lecture (3) (Lab (1)			MW 8:30-9:50 TR 7:00-8:20 M 6:30-8:20 M 8:30-10:20 R 6:30-8:20 R 8:30-10:20 T 8:30-10:20	
CTCP-301,306 0245-301-01 -02 0245-306-40 -41 -42	Physics Lecture (4) (Lab(1)	MW 6:30-8:20 TR 8:30-10:20 W 6:30-8:20 T 6:30-8:20 W 8:30-10:20			
CTCP-302,307 0245-302-01 -02 0245-307-40 -41 -42	Physics Lecture (4) (Lab(1)		MW 6:30-8:20 TR 8:30-10:20 W 6:30-8:20 T 6:30-8:20 W 8:30-10:20		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTDS-430 0250-430-01	Numerical Methods (4)	NOT OFFEREE	1988-89		
CTDS-440 0250-440-01	Operating Systems (4)	MW 8:30-10:20			
CTDS-480 0250-480-01	Formal Languages (4)		MW 6:30-8:20		
CTDS-485 0250-485-01	Data Base Concepts (4)			TR 6:30-8:20	M 6:00-9:50
CTDS-520 0250-520-01	Computer Architecture (4)		MW 8:30-10:20		
CTDS-525 0250-525-01	Assemblers Interpreters & Compilers (4)		MW 8:30-10:20		
CTDS-530 0250-530-01	Discrete Simulation (4)	MW 6:30-8:20			
CTDS-545 0250-545-01	Processor Design Concepts (4)	NOTOFFEREC	1988-89		
CTDS-550 0250-550-01	Review of Computer Science (4)			MW 8:30-10:20	
CTDS-565 0250-565-01	Computer Systems Selection (4)			TR 8:30-10:20	
Engineering Technology - Electrical - CTEE					
CTEE-101 0253-101-01	Basic Mathematics for Electronics (3)	NOT OFF	ERED 1988-89		
CTEE-102 0253-102-01	Basic Mathematics for Electronics (3)	NOT OFF	:RED 1988-89		
CTEE-103 0253-103-01	Basic Mathematics for Electronics (3)	NOT OFF	ERED 1988-89		
CTEE-105 0253-105-01	Electrical Schematics (1)	NOT OFF	RED 1988-89		
CTEE-106 0253-106-01	Electrical Schematics (1)	NOT OFF	ERED 1988-89		
CTEE-107 0253-107-01	Electrical Schematics (1)	NOT OFF	ERED 1988-89		
CTEE-321,326 0253-321-01 -326-40 -41	Digital Systems Lecture (3) LAB (1)	MW 6:30-7:50 (CITY CENTER) T 6:30-8:20 (CITY CENTER) W 8:30-10;20 (CITY CENTER)			

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTCP-303.308 0245-303-01 -02 0245-308-40 -41 -42	Physics Lecture (4) (Lab (1)			MW 6:30-8:20 TR 8:30-10:20 W 6:30-8:20 T 6:30-8:20 W 8:30-10:20	
CTCP-457 0245-457-01 -02	Modern Physics (4)	MW 8:30-10:20 TR 8:30-10:20	MW 6:30-8:20		
CTCP-458 0245-458-01 -02	Modern Physics (4)		MW 8:30-10:20 TR 8:30-10:20	MW 6:30-8:20	
CTCP-459 0245-459-01 -02	Nucfea? Physics (4)			MW 8:30-10:20 TR 8:30-10:20	
Contemporary Science - CTCS					
CTCS-221 0246-221-01 -02 -10	Contemporary Science Biology (4)	MW 8:30-10:20 TR 6:30-8:20	S 9:00-5:00	MW 6:30-8:20	
CTCS-222 0246-222-01 -02 -10	Contemporary Science Chemistry (4)	MW 6:30-8 20	MW 8:30-10:20 TR 6.30-8:20	S 9:00-5:00	
CTCS-223 0246-223-01 -02 -10	Contemporary Science Physics (4)	S 9:00-5:00	MW 6:30-8:20	MW 8:30-10:20 TR 6:30-8:20	
CTCS-224 0246-224-05	Oceanus (4)	TELECOURSE	TELECOURSE	TELECOURSE	
CTCS-289 0246-289-05	Mechanical Universe		TELECOURSE	TELECOURSE	
Computer Programing - CTDP					
CTDP-201 0249-201-01 -02	Computer Techniques (2)	W 8:30-10:20	R 8:30-10:20	T 8:30-10:20	T 6:30-8:20
CTDP-215 0249-215-01	FORTRAN Programing (4)	TR 6:30-8:20	MW 6:30-8:20	TR 6:30-8:20	MW 6:30-8:20
CTDP-241 0249-241-01 -02	Programing I Algorithmic Structures	TR 8:30-10:20 MW 6:30-8:20	TR 6:30-8:20	TR 6:30-8:20	
CTDP-242 0249-242-01 -02	Programing II Data Structures	MW 8:30-10:20	TR 8:30-10:20 MW 6:30-8:20	TR 6:30-8:20	
CTDP-243 0249-243-01 -02	Programing III Design and Implementation	MW 8:30-10:20	MW 8:30-10:20	MW 6:30-10:20	
CTDP-305 0249-305-01 -02	Assembly Language Programing (4)	1R 6:30-8:20	MW 6:30-8:20	MW 8:30-10:20	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTDP-307 0249-307-01	Business Applications Programing (4)		MW 6:30-8:20		
CTDP-318 0249-318-01	APL Programing Techniques & Applications (4)	NOT	OFFERED 1988-89		
CTDP-320 0249-320-01	Computer Programing for Engineers (4)			MW 6:30-8:20	TR 6:30-8:20
CTDP-330 0249-330-01	PL/1 Programing (4)			MW 6:30-8:20	
CTDP-488 0249-488-01	Programing Systems Workshop (4)			MW 8:30-10:20	
Computer Systems - CTDS					
CTDS-200 0250-200-01 -05	Introduction to Computers & Programing (4)	MW 6;30-8:20 TELECOURSE	TR 6:30-8;20 TELECOURSE	TR 6:30-8:20 TELECOURSE	TELECOURSE
CTDS-201 0250-201-01 -02	Applications Software	TBA	TBA		
CTDS-202 0250-202-01 -02	Introduction to Computer Science (4)	MW 6:30-8:20 TR 6:30-8:20	TR 6:30-8:20	TR 8:30-10:20 MW 6:30-8:20	
CTDS-203 0250-203-01 -02	Advanced Applications Software (4)	MW 6:30-8:20	TBA	TBA	
CTDS-315 0250-315-01	Digital Computer Organization (4)	MW 8:30-10:20		MW 8:30-10:20	
CTDS-325 0250-325-01 CTDS-335 0250-335-01	Data Organization & Management (4) System Specification. Design and Implementation (4)	TR 8:30-10:20		TR 8:30-10:20	MW 6:30-8:20
CTDS-340 0250-340-01	Finite State Machines & Automata (4)	MW 6:30-8:20			
CTDS-400 0250-400-01	Logical Design (4)		MW 8:30-10:20		
CTDS-420 0250-420-01	Data Communication Systems (4)		TR 6:30-8:20		W 6:00-9:50

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTEF-203 0255-203-01 -02	Manufacturing Analysis (3)			MW 8:30-9:50 TR 8:30-9:50	
CTEF-210 0255-210-01	Industrial Plastics (4)		MW 6:30-8:20 (CITY CENTER)	MW 8:30-10:20	
CTEF-314 0255-314-01	Materials Technology (3)	TR 8:30-9:50			
CTEF-315 0255-315-01	Materials Technology II (3)		TR 8:30-9:50		
CTEF-328 0255-328-01	Report Writing (2)	T 6:30-8:20		T 6:30-8:20	
CTEF-360 0255-360-01	Numerical Control Applications (4)	CONTACT	DEPARTMENT		
CTEF-370 0255-370-01	Tool Design (4)			TR 8:30-10:20	
CTEF-380 0255-380-01	Time Study (3)	TR 7:00-8:20			
CTEF-391 0255-391-01	Prod Control (4)		NOT OFFERED	1988-89	
Building Technology - CTIB					
CTIB-101 0261-101-01	Architectural & Structural Blueprint Reading (Residential) (3)	MW 7:00-8:20			
CTIB-102 0261-102-01	Architectural & Structural Blueprint Reading (Commercial) (3)		MW 7:00-8:20		
CTIB-201 0261-201-01	Architectural Drawing (2)	TR 6:30-8:20			
CTIB-202 0261-202-01	Architectural Drawing (2)		TR 6:30-8:20		
CTIB-203 0261-203-01	Architectural Drawing (2)			TR 6:30-8:20	
CTIB-204 0261-204-01	Architectural Drawing (2)	TBA			
CTIB-205 0261-205-01	Architectural Drawing (2)		TBA		
CTIB-206 0261-206-01	Architectural Drawing (2)			TBA	
CTIB-207 0261-207-01	Architectural Drawing (2)		Contact Dept.		
CTIB-208 0261-208-01	Architectural Drawing (2)		Contact Dept.		
CTIB-209 0261-209-01	Architectural Drawing (2)		Contact Dept.		
CTIB-231 0261-231-01	Surveying (4)			MW 6:30-8:20	
CTIB-241 0261-241-01	Building Materials (4)		NOT OFFERED 1988 89		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTIB-242 0261-242-01	Building Construction (3)		NOT OFFERED 1988-89		
CTIB-243 0261-243-01	Building Construction (3)		NOT OFFERED 1988-89		
CTIB-251 0261-251-01	Construction Contracting (3)	MW 8:30-9:50			
CTIB-252 0261-252-01	Building Estimating (Residential) (3)		MW 8:30-9:50		
CTIB-253 0261-253-01	Building Estimating (Commercial) (3)			MW 8:30-9:50	
CTIB-301 0261-301-01	Structural Theory (4)	TBA, Contact Dept			
CTIB-302 0261-302-01	Structural Design (4)		TBA. Contact Dept.		
CTIB-311 0261-311-01	Architectural Projects (2)		TBA, Contact Dept		
CTIB-312 0261-312-01	Architectural Projects (2)		TBA, Contact Dept		
CTIB-313 0261-313-01	Architectural Projects (2)		TBA, Contact Dept		
Engineering Drawing - CTID					
CTID-101 0262-101-01 -02 -06	Mechanical Blueprint Reading (1)	T 6:30-8:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER)	M 6:30-8:20 (CITY CENTER)	R 6:30-8:20 (CITY CENTER) R 9:00-11:00 am (CITY CENTER)	W 6:30-8:20 (CITY CENTER)
CTID-102 0262-102-01	Mechanical Blueprint Reading II (1)		W 6:30-8:20 (CITY CENTER)	W 6:30-8:20 (CITY CENTER)	
CTID-141 0262-141-01	Tool Design (2)	TR 6:30-8:20 (CITY CENTER)			
CTID-142 0262-142-01	Tool Design (2)		TR 6:30-8:20 (CITY CENTER)		
CTID-143 0262-143-01	Tool Design (2)			TR 6:30-8:20 (CITY CENTER)	
CTID-201 0262-201-01 -02 -03	Engineering Drawing (2)	M 5:30-8:20 S 9:00-11:50 (CITY CENTER) . TR 5:30-7:30 (CITY CENTER) or TR 12-1:50 pm (CITY CENTER)			

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTID-202 0262-202-01 -02 -03	Engineering Drawing (2)		M 5:30-8:20 S 9:00-11:50 (CITY CENTER) TR 5:30-7:30 (CITY CENTER) or TR 12-1:50 pm (CITY CENTER)		
CTID-203 0262-203-01 -02 -03	Engineering Drawing (2)			M 5:30-8:20 S 9:00-11:50 (CITY CENTER) TR 5:30-7:30 (CITY CENTER) or TR 12-1:50 pm <GTY CENTER)	
CTID-211 0262-211-01 -02	Engineering Graphics (2)	MW 6:30-8:20 TR 8:30-10:20			
CTID-212 0262-212-01 -02	Engineering Graphics (Descriptive Ceo.) (2)		MW 6:30-8:20 TR 8:30-10:20		
CTID-213 0262-213-01 -02	Engineering Graphics (Intro. Kinematics) (2)			MW 6:30-8:20 TR 8:30-10:20	
Industrial Technology - Electromechanical - CTIL					
CTIL-201. 206 0264-201-01 -02 0264-206-41 -42 -43 -44	Elements of Electricity & Electronics Lecture (3) Lab (1)	MW 7:00-8:20 (CITY CENTER) TR 8:30-9:50 or MR 8:30-9:50am (CITY CENTER) or M 8:30-10:20 (CITY CENTER) W 8:30-10:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER) T 6:30-8:20 OR M 10:00-11:50 am (CITY CENTER)			
CTIL-202,207 0264-202-01 -02 0264-207-41 -42 -43 -44	Elements of Electricity & Electronics Lecture (3) Lab (1)		MW 7:00-8:20 (CITY CENTER) TR 8:30-9:50 or MR 8:30-9:50 am (CITY CENTER) or M 8:30-10:20 (CITY CENTER) W 8:30-10:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER) T 6:30-8:20 OR M 10:00-11:50 am (CITY CENTER)		
CTIL-203,208 0264-203-01 -02 0264-208-41 -42 -43 -44	Elements of Electricity & Electronics Lecture (3) Lab (1)			MW 7:00-8:20 (CITY CENTER) TR 8:30-9:50 or MR 8:30-9:50 am (CITY CENTER) M 8:30-10:20 (CITY CENTER) W 8:30-10:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER) T 6:30-8:20 OR M 10:00-11:50 am (CITY CENTER)	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTEE-322 0253-322-01	Analog Systems (3)		MW 6:30-7:50 (CITY CENTER)		
CTEE-322 0253-322-01	Analog Systems (3)		MW 6:30-7:50 (CITY CENTER)		
CTEE-323 0253-323-01	Computer Systems (3)			MW 6:30-7:50 (CITY CENTER)	
CTEE-331 0253-331-01	Programmabie Controllers (3)			TR 6:30-7:50 (CITY CENTER)	
CTEE-361-366 0253-361-01 0253-366-40 -41	Applied Electronics Lecture (3) Lab (1)	TR 8:30-9:50 (CITY CENTER) M 8:30-10:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER)			
CTEE-362-367 0253-362-01 0253-367-40 -41	Applied Electronics Lecture (3) Lab (1)		TR 8:30-9:50 (CITY CENTER) M 8:30-10:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER)		
CTEE-363-368 0253-363-01 0253-368-40 -41	Applied Electronics Lecture (3) Lab (1)			TR 8:30-9:50 (CITY CENTER) M 8:30-10:20 (CITY CENTER) R 6:30-8:20 (CITY CENTER)	
Engineering Technology - CTEM					
CTEM-301 0254-301-01	Statics (4)	TR 6:30-8:20			
CTEM-302 0254-302-01	Dynamics (4)	»	TR 6:30-8:20		
CTEM-303 0254-303-01	Strength of Materials (4)			TR 6:30-8:20	
CTEM-315 0254-315-01	Principles of Mechanical Design I (3)	MW 8:30-10:20		.	
CTEM-316 0254-316-01	Principles of Mechanical Design II (3)		MW 8:30-10:20		
CTEM-317 0254-317-01	Principles of Mechanical Design III (3)			MW 8:30-10:20	
Engineering Technology - Manufacturing - CTEF					
CTEF-201 0255-201-01 -02	Manufacturing Analysis (3)	MW 8:30-9:50 TR 8:30-9:50			
CTEF-202 0255-202-01 -02	Manufacturing Analysis (3)		MW 8:30-9:50 TR 8:30-9:50		

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTIL-221 0264-221-01	Mechanical Components & Mechanisms (4)	TR 6:30-8:20 (CITY CENTER)			
CTIL-222 0264-222-01	Mechanical Components & Mechanisms (4)		TR 6:30-8:20 (CITY CENTER)		
CTIL-301,306 0264-301-01 0264-306-40 -41	Machines & Power Systems Lecture (3) Lab(1)	TR 7:00-8:20 (CITY CENTER) M 6:30-8:20 (CITY CENTER) R 8:30-10:30 (CITY CENTER)			
CTIL-302,307 0264-302-01 0264-307-40 -41	Machines & Power Systems Lecture (3) Lab(1)		TR 7:00-8:20 (CITY CENTER) M 6:30-8:20 (CITY CENTER) R 8:30-10:30 (CITY CENTER)		
CTIL-303,308 0264-303-01 0264-308-40 -41	Pneumatic & Hydraulic Systems Lecture (3) Lab (1)			TR 7:00-8:20 (CITY CENTER) M 6:30-8:20 (CITY CENTER) R 8:30-10:30 (CITY CENTER)	
CTIL-351 0264-351-01	Electromechanical Devices & Systems (4)	MW 6:30-8:20 (CITY CENTER)			
CTIL-352 0264-352-01	Electromechanical Devices & Systems (4)		MW 6:30-8:20 (CITY CENTER)		
CTIL-353,358 0264-353-01 -358-40	Introduction to Microprocessors (3) Lab (1)		MW 6:30-8:20 (CITY CENTER) MW 8:30-10:20 (CITY CENTER)	MW 6:30-8:20 (CITY CENTER) MW 8:30-10:20 (CITY CENTER)	
Machine Shop - CTIS					
CTIS-101 0266-101-41	Precision Measurements (1)	W 6:00-8:20			
CTIS-102 0266-102-41	Precision Measurements (1)		W 6:00-8:20		
CTIS-103 0266-103-41	Precision Measurements (1)			W 6:00-8:20	
CTIS-104-109 0266-104-41 -42 -43	Advanced Machine Shop (1)	M 6:30-9:30pm (CITY CENTER) T 6:30-9:30 pm (CITY CENTER) W 6:30-9:30 pm (CITY CENTER)	Same as Fall Quarter	Same as FallQuarte	

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTIS-111-119 0266-111-41 -42 -43	Instrument Making and and Experimental Work (1)	M 6:30-9:30 pm (CITY CENTER) T 6:30-9:30 pm (CITY CENTER) W 6:30-9:30 pm (CITY CENTER)	Same as Fall Quarter	Same as FallQuarte	
CTIS-121-129 0266-121-41 -42 -43	Tool and Die Making (1)	M 6:30-9:30 pm (CITY CENTER) T 6:30-9:30pm (CITY CENTER) W 6:30-9:30pm (CITY CENTER)	Same as Fall Quarter	Same as Fall Quarte	
CTIS-151 0266-151-01 -03	Shop Math (2)	M 6:20-8:20 (CITY CENTER) R 6:20-8:20 (CITY CENTER)			
CTIS-152 0266-152-01 -03	Shop Math (2)		M 6:20-8:20 (CITY CENTER) R 6:20-8:20 (CITY CENTER)		
CTIS-153 0266-153-01 -03	Shop Math (2)			M 6:20-8:20 (CITY CENTER) R 6:20-8:20 (CITY CENTER)	
CTIS-154 0266-154-01	Shop Trigonometry (2)	M 6:20-8:20 (CITY CENTER)			
CTIS-155 0266-155-01	Shop Trigonometry (2)		M 6:20-8:20 (CITY CENTER)		
CTIS-156 0266-156-01	Shop Trigonometry (2)			M 6:20-8:20 (CITY CENTER)	
CTIS-157 0266-157-01	Shop Mathematics (3)		T 6:20-9:20 (CITY CENTER)		
CTIS-158 0266-158-01	Shop Mathematics (3)			T 6:20-9:20 (CITY CENTER)	
CTIS-161 0266-161-41 -42	Heat Treatment (3)	M 6:30-9:30 (CITY CENTER) R 6:30-9:30 (CITY CENTER)	4		
CTIS-162 0266-162-42	Heat Treatment (3)	R 6:30-9:30 (CITY CENTER)			
CTIS-201-206 0266-201-01 0266-206-41 201-02 206-42 201-03 206-43	Machine Shop Lecture (1) Lab(1) Lecture (1) Lab (1) Lecture (1) Lab (1)	M 6:00-7:00 (CITY CENTER) M 7:00-10:00 (CITY CENTER) T 6:00-7:00 (CITY CENTER) T 7:00-10:00 (CITY CENTER) W 6:00-7:00 (CITY CENTER) W 7:00-10:00 (CITY CENTER)	W 6:00-7:00 (CITY CENTER) W 7:00-10:00 (CITY CENTER)		

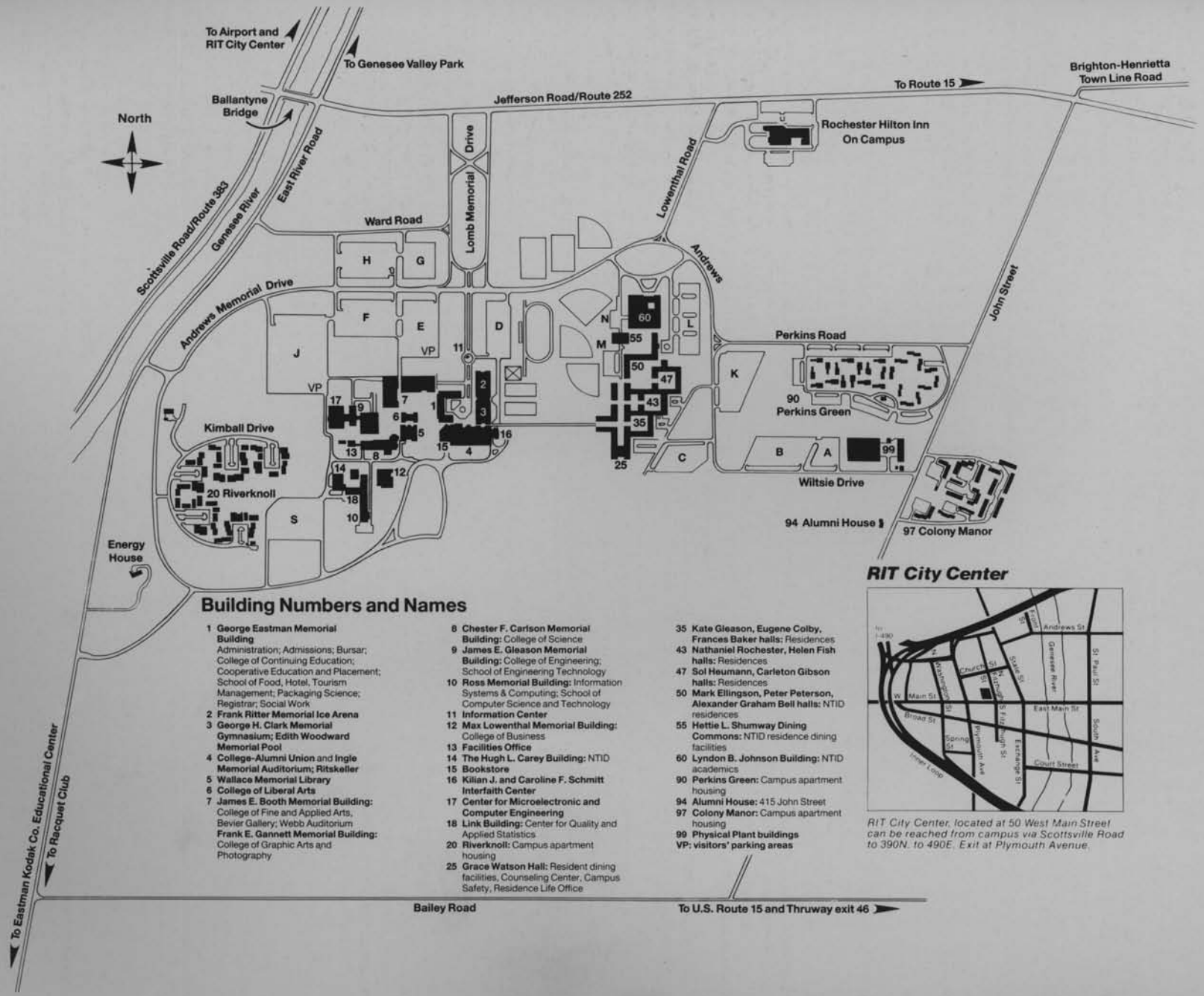
Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CTIS-202-207 0266-202-01 0266-207-41 202-02 207-42 202-03 207-43	Machine Shop lecture (1) Lab(1) Lecture (1) Lab (1) Lectured) Lab (1)		M 6:00-7:00 (CITY CENTER) M 7:00-10:00 (CITY CENTER) T 6:00-7:00 (CITY CENTER) T 7:00-10:00 (CITY CENTER) W 6:00-7:00 (CITY CENTER) W 7:00-10:00 (CITY CENTER)	W 6:00-7:00 (CITY CENTER) W 7:00-10:00 (CITY CENTER)	
CTIS-203-08 0266-203-01 0266-208-41 203-02 208-42 203-03 208-43	Machine Shop Lecture (1) Lab(l) Lecture (1) Lab (1) Lecture (1) Lab (1)			M 6:00-7:00 (CITY CENTER) M 7:00-10:00 (CITY CENTER) T 6:00-7:00 (CITY CENTER) T 7:00-10:00 (CITY CENTER) W 6:00-7:00 (CITY CENTER) W 7:00-10:00 (CITY CENTER)	See Advisor for Summer Schedule
CTIS-204-209 0266-204-01 02266-209-41	Machine Shop Lecture(3) Lab (3)				MTR 6:00-7:00 (CITY CENTER) MTR 7:00-10:00 (CITY CENTER)
aiS-281 0266-281-41	Numerical Control Systems (Mill) (3)	M 7:00-9:45 (CITY CENTER)	M 7:00-9:45 (CITY CENTER)	M 7:00-9:45 (CITY CENTER)	
CTIS-282 0266-282-41	Numerical Control Systems (Lathe) (3)	W 7:00-9:45 (CITY CENTER)	W 7:00-9:45 (CITY CENTER)	W 7:00-9:45 (CITY CENTER)	
CTIS-283 0266-283-41	Computer Programming for Numerical Control (3)		R 7:00-9:45 (CITY CENTER)	R 7:00-9:45 (CITY CENTER)	
SAIS Drafting-CAID					
CAID-245 0271-245-03	Intro to CAD (2)	T 5:30-8:20 (CITY CENTER)	T 5:30-8:20 (CITY CENTER)	T 5:30-8:20 (CITY CENTER)	TBA .
CAID-247 0271-247-03	CAD (3)	T 5:30-9:30 (CITY CENTER)	T 5:30-9:30 (CITY CENTER)	T 5:30-9:30 (CITY CENTER)	TBA
CAID-248 0271-248-03	CAM-CNC (4)	R 5:30-9:30 (CITY CENTER)	R 5:30-9:30 (CITY CENTER)	R 5:30-9:30 (CITY CENTER)	TBA
CAID-201 0271-201-03	Intro to CIM (3)	M 5:30-8:20 (CITY CENTER)	M 5:30-8:20 (CITY CENTER)	M 5:30-8:20 (CITY CENTER)	TBA
Quality and Applied Statistics - CQAS					
CQAS-701 0280-701-01	Statistical Concepts (3 or 4)		M 6:30-9:20	T 6:30-9:20	W 6:30-9:20
CQAS-711 0280-711-01 -02 -90	Fundamentals of Statistics 1 (3 or 4)	M 6:30-9:20 W 6:30-9:20 R 5:00-9:20 (WBHS)	T 6:30-9:20	R 6:30-9:20	T 6:30-9:20

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CQAS-712 0280-712-01 -02 -90	Fundamentals of Statistics II (3 or 4)	T 6:30-9:20	M 6:30-9:20 W 6:30-9:20 R 5:00-9:20 (WBHS)	T 6:30-9:20	R 6:30-9:20
CQAS-721 0280-721-01 -90	Statistical Quality Control 1 (3)	R 6:30-9:20	T 6:30-9:20 W 5:00-8:00 (WBHS)	R 6:30-9:20	
CQAS-731 0280-731-01 -90	Statistical Quality Control II (3)		R 6:30-9:20	W 5:00-8:00 (WBHS)	R 6:30-9:20
CQAS-742 0280-742-01	Statistical Computing (3)	M 6:30-9:20	T 6:30-9.20	R 6:30-9:20	W 6:30-9:20
CQAS-761 0280-761-01	Reliability (3)	T 6:30-9:20		W 6:30-9:20	
CQAS-781 0280-781-01	Quality Management (3)		M 6:30-9:20		M 6:30-9:20
CQAS-782 0280-782-01	Quality Engineering (3)	M 6:30-9:20		T 6:30-9:20	
CQAS-783 0280-783-01	Quality Engineering by Design (3)	M 6:30-9:20			
CQAS-791 0280-791-01	Statistical Methods in Health Sciences (3)		W 6:30-9:20		
CQAS-792 0280-792-01	Biological Assays (3)	TBA	TBA	TBA	TBA
CQAS-801 0280-801-01	Design of Experiments (3)	W 6:30-9:20	M 6:30-9:20	W 6:30-9:20	T 6:30-9:20
CQAS-802 0280-802-01	Design of Experiments II (3)	M 6:30-9:20	W 6:30-9:20	M 6:30-9:20	W 6:30-9:20
CQAS-821 0280-821-01 -02	Theory of Statistics 1 (3)	M 6:30-9:20 R 6:30-9:20	W 6:30-9:20		T 6:30-9:20
CQAS-822 0280-822-01 -02	Theory of Statistics II (3)	W 6:30-9:20	M 6:30-9:20 R 6:30-9:20	W 6:30-9:20	
CQAS-824 0280-824-01	Probability Models (3)			R 6:30-9:20	
CQAS-830 0280-830-01	Multivariate Analysis 1 (3)		T 6:30-9:20		
CQAS-831 0280-831-01	Multivariate Analysis II (3)			T 6:30-9:20	
CQAS-841 0280-841-01	Regression Analysis 1 (3)	T 6:30-9:20	R 6:30-9:20	M 6:30-9:20	W 6:30-9:20
CQAS-842 0280-842-01	Regression Analysis II (3)	W 6:30-9:20	T 6:30-9:20	R 6:30-9:20	
CQAS-851 0280-851-01	Nonparametric Statistics (3)			T 6:30-9:20	R 6:30-9:20

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CQAS-853 0280-853-01	Managerial Decision Making (3)		R 6:30-9:20		W 6:30-9:20
CQAS-856 0280-856-01	Interpretation of Data (3)		M 6:30-9:20		T 6:30-9:20
CQAS-864 0280-864-01	Advanced Acceptance Sampling (3)	M 6:30-9:20			
CQAS-871 0280-871-01	Sampling Theory and Applications (3)	T 6:30-9:20		M 6:30-9:20	
CQAS-873 0280-873-01	Time Series Analysis (3)	W 6:30-9:20			
CQAS-875 0280-875-01	Empirical Modeling (3)			M 6:30-9:20	
CQAS-881 0280-881-01	Bayesian Statistics (3)	R 6:30-9:20		W 6:30-9:20	
CQAS-886 0280-886-01	Sample Size Determination (3)	R 6:30-9:20			M 6:30-9:20
CQAS-891 0280-891, 892 893	Special Topics in Applied Statistics (3)	Mixture Topics and Hours To Be Announced.	Topics and Hours To Be Announced	Stat Math Topics and Hours To Be Announced.	Topics and Hours To Be Announced
CQAS-895 0280-895-01	Statistics Seminar (3)	Topics and Hours To Be Announced.	Topics and Hours To Be Announced.	Topics and Hours To Be Announced	Topics and Hours To Be Announced.
CQAS-896 0280-896, 897 898	Thesis (3 to 9)	Arrangements must be made with the Chairperson.	Arrangements must be made with the Chairperson.	Arrangements must be made with the Chairperson.	Arrangements must be made with the Chairperson.
CQAS-899 0280-899-01	Individual Achievement Program (1to9)	Arrangements must be made with the Chairperson.	Arrangements must be made with the Chairperson.	Arrangements must be made with the Chairperson.	Arrangements must be made with the Chairperson.
Career and Human Resource Development - CHRD					
CHRD-700 0290-700-01	Intro to CHRD (3)	M 6:00-8:30		M 6:00-8:30	
CHRD-705 0290-705-01	Assess Methods (3)	T 6:00-8:30		T 6:00-8:30	
CHRD-710 0290-710-01	Theories of Org Dev (3)		T 6:00-8:30		T 6:00-8:30
CHRD-711 0290-711-01	Futures Res & Simulat (3)			W 6:00-8:30	
CHRD-712 0290-712-01	Plan & Eval in Org Dev. (3)	W 6:00-8:30			

Course Registration Numbers	Subject and Credit	Fall	Winter	Spring	Summer
CHRD-713 0290-713-01	Practice of Consult-O D. (3)		R 6:00-8:30		
CHRD-720 0290-720-01	Theories of Career Dev (3)	R 6:00-8:30		R 6:00-8:30	
CHRD-721 0290-721-01	Ind Career Courts Techs (3)		M 6:00-8:30		
CHRD-722 0290-722-01	Career Couns. Techs-Group (3)			M 6:00-8:30	
CHRD-723 0290-723-01	Info Use In Career Plan (3)	M 6:00-8:30			
CHRD-730 0290-730-01	Theory of Hum Res Dev (3)		M 6:00-8:30		M 6:00-8:30
CHRD-731 0290-731-01	Techs of Hum Res. Dev (3)			T 6:00-8:30	
CHRD-732 0290-732-01	Des & Del Trg (2)	T 6:00-8:30(Lab)			
CHRD-733 0290-733-01	Needs Assess & Probl. Solv (3)		T 6:00-8:30		
CHRD-750 0290-750-01	Computer Appl. inCHRD (3)		M 6:00-9:00 (Lab)		W 6:00-9:00 (Lab)
CHRD-850 0290-850-01	Special Projects Variable	TBA	TBA	TBA	TBA
CHRD-891-2-3 0290-891-2-3 -01	Selected topics (3)	TBA	TBA	TBA	TBA
CHRD-877 0290-877-01	Internship (6)		TBA		TBA

.



Building Numbers and Names

1 **George Eastman Memorial Building** Administration; Admissions; Bursar; College of Continuing Education; Cooperative Education and Placement; School of Food, Hotel, Tourism Management; Packaging Science; Registrar; Social Work
2 **Frank Ritter Memorial Ice Arena**
3 **George H. Clark Memorial Gymnasium; Edith Woodward Memorial Pool**
4 **College-Alumni Union** and **Ingle Memorial Auditorium; Ritskeller**
5 **Wallace Memorial Library**
6 **College of Liberal Arts**
7 **James E. Booth Memorial Building:** College of Fine and Applied Arts, Bevier Gallery; Webb Auditorium
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; School of Engineering Technology
10 **Ross Memorial Building:** Information Systems & Computing; School of Computer Science and Technology
11 **Information Center**
12 **Max Lowenthal Memorial Building:** College of Business
13 **Facilities Office**
14 **The Hugh L. Carey Building:** NTID
15 **Bookstore**
16 **Kilian J. and Caroline F. Schmitt Interfaith Center**
17 **Center for Microelectronic and Computer Engineering**
18 **Link Building:** Center for Quality and Applied Statistics
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, Carleton 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
94 **Alumni House:** 415 John Street
97 **Colony Manor:** Campus apartment housing
99 **Physical Plant buildings**
VP: visitors' parking areas

RIT City Center

RIT City Center, located at 50 West Main Street, can be reached from campus via Scottsville Road to 390N, to 490E. Exit at Plymouth Avenue.

Rochester Institute of Technology

College of Continuing Education
One Lomb Memorial Drive
P.O. Box 9887
Rochester, NY 14623-0887

12.5M-6677-7/88-DD-RMH-GVG