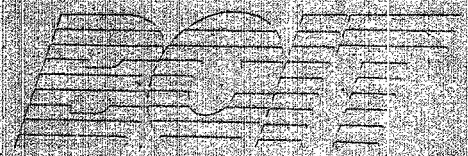
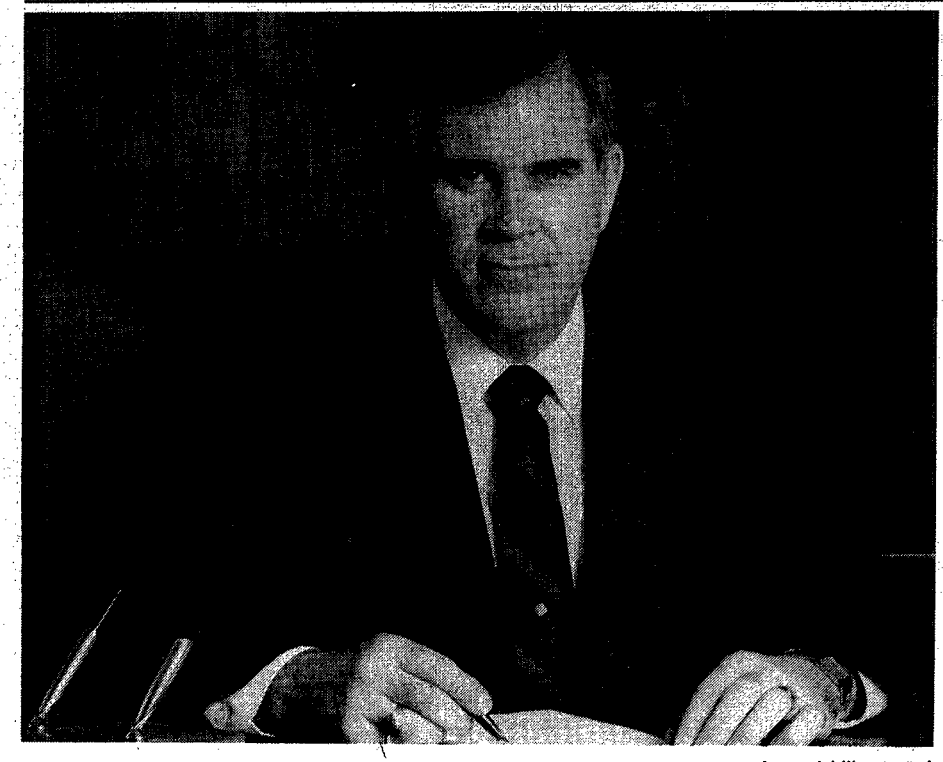
BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

CALENDAR 1988/89

Part-time Technology and Trade Courses and Programs



President's Message



I would like to take this opportunity to welcome you to BCIT. I am confident you will find your studies challenging, and the curriculum current and relevant to your field of interest.

These are exciting and challenging times for the Institute. As recently announced by the Government, BCIT is to become the centre for advanced technology training for the Province of British Columbia. This new mandate will provide an opportunity to do some creative and innovative programming in the high tech field – a challenge we look forward to eagerly.

We have a dedicated group of instructors, support staff and management who will do their utmost to ensure that the education you receive at the Institute will fully prepare you for advancement in your career.

You will find the Student Association active, energetic and dedicated to making your time at the Institute as enjoyable as possible.

I hope to have the opportunity of meeting you during your time with us and wish you every success in your studies.

Sincerely,

Roy V. Murray, P.Eng.
President

BCIT

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Director: Bob McKenzie
Editor: Mary Bacon, B.A.
Publications/Advertising Officer
Typesetting: Laser's Edge Ltd.
Printer: College Printers

Changes to the Curricula and Regulations

Changes to BCIT's academic structure have been proposed at the time of going to press.

Although it is proposed to adhere to the programs of study as set forth in this calendar, the Institute reserves the right to make, without prior notice, whatever changes are deemed necessary to either the programs of study or the regulations. The Institute reserves the right to cancel any program.

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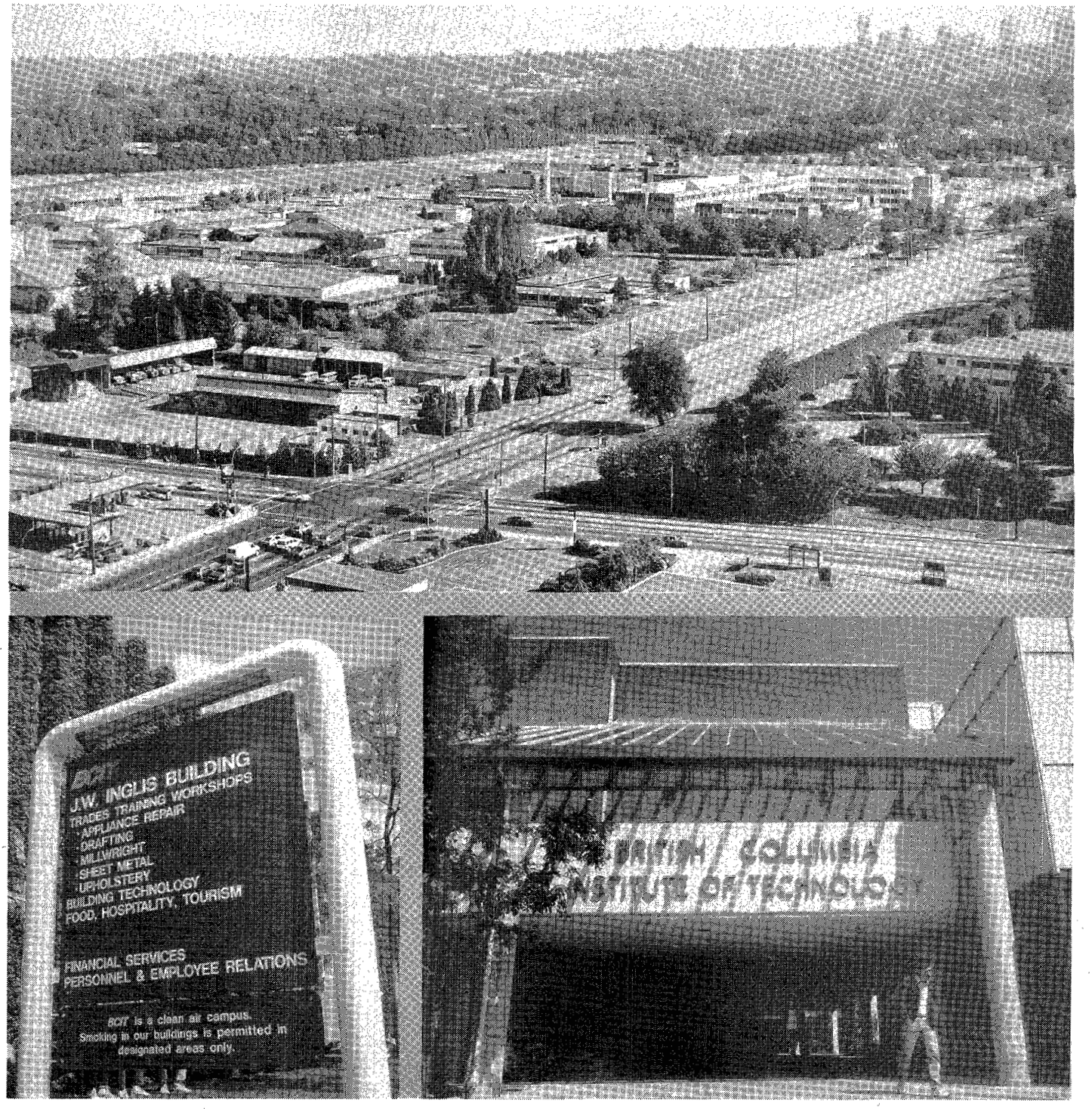
Notes


J.W. INGLIS BUILDING
TRADES TRAINING WORKSHOPS
• APPLIANCE REPAIR
• DRAFTING
• MILLWRIGHT
• SHEET METAL
• UPHOLSTERY
BUILDING TECHNOLOGY
FOOD, HOSPITALITY, TOURISM
FINANCIAL SERVICES
PERSONNEL & EMPLOYEE RELATIONS
BCIT is a clean air campus.
Smoking in our buildings is permitted in
designated areas only.

General Information

CAMPUS LOCATIONS

1. Burnaby, Main Campus – Full-time and part-time technology and trades courses and programs.

   3700 Willingdon Avenue
   Burnaby, B.C.
   V5G 3H2
   434-5734 (Campus Switchboard)

   Important Numbers:

   Program Advising 434-3304
   Counselling 434-3304
   Financial Aid and Awards 432-8555
   Admission – Full-time programs 432-8419
   Registration – Part-time 434-1610
   Student Records 432-8478

   Office hours for most departments are 0830 to 1630, Monday to Friday. Admission office hours for general enquiries are 0830 to 1300 Monday to Friday; after 1300, enquiries should be directed to the Registration Office.

   Office hours for registration and general enquiries – From late August to early December and early January to late April.

   0830-2030 Monday - Thursday
   0830-1630 Friday
   0830-1230 Saturday (except holiday weekends)

2. Downtown Education Centre – Part-time studies technology courses only

   549 Howe Street
   Vancouver, B.C.
   V3C 2C6
   687-4666

   Office Hours – When school is in session:

   0830-1830 Monday - Thursday
   0830-1630 Friday
   Otherwise 0830-1730 Monday - Friday.

3. Surrey –Part-time studies technology courses only.

   Princess Margaret Senior Secondary School
   12870 72nd Avenue
   Surrey, B.C.
   V3W 2N1

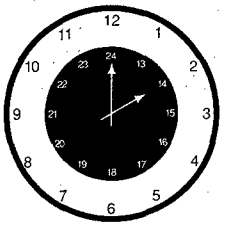
   NOTE: While the Burnaby main campus and Downtown Education Centre offer year-round registration service for part-time studies courses, the Surrey location has limited registration services. Please see our advertising supplements for registration and course details for this location.

4. Sea Island – Aviation courses and programs only.

   Vancouver Internatonal Airport (South)
   4440 Stark Street
   Richmond, B.C.
   V7B 1A1
   278-4831

BCIT USES THE 24-HOUR CLOCK

0001 - 12:01 AM
0100 - 1:00
0200 - 2:00
0300 - 3:00
0400 - 4:00
0500 - 5:00
0600 - 6:00
0700 - 7:00
0800 - 8:00
0900 - 9:00
1000 - 10:00
1100 - 11:00
1200 - 12:00 noon



1300 - 1:00 PM
1400 - 2:00
1500 - 3:00
1600 - 4:00
1700 - 5:00
1800 - 6:00
1900 - 7:00
2000 - 8:00
2100 - 9:00
2200 - 10:00
2300 - 11:00
2400 - 12:00 midnight

PERSONAL DATA

It is the student's responsibility to ensure all personal data on file with the Registrar's Office is accurate.

REFUND DEADLINE

It is the student's responsibility to check the refund deadline dates. Please see refund section on page 20.

AIDS POLICY

It is the policy of BCIT that there shall be no discrimination against any person at BCIT known, or suspected to have AIDS or to be infected with HIV (AIDS virus). BCIT's Medical Services Department will develop a clear set of guidelines for assisting staff and students to understand and deal with the appropriate handling of bodily fluids. BCIT will not insist on mandatory blood testing for the AIDS antibody. While BCIT's policy does not require mandatory testing for AIDS, it should be recognized that BCIT has no control over the policies of external agencies employing BCIT students and/or graduates.

If an employee's or student's health status deteriorates because of AIDS and if his/her condition indicates alternative or special arrangements, the individual will be treated in the same manner and with the same confidentiality as any other person with a serious illness.

CLEAN AIR POLICY

It is the policy of the British Columbia Institute of Technology that a smoke free environment be provided for employees, students and visitors. Smoking is, therefore, restricted to specially designated areas throughout the Institute.

CONDUCT AND ATTENDANCE

It is assumed that all students enrolled at the British Columbia Institute of Technology are interested in pursuing an intense program of studies and that they are prepared to conform to all regulations.

1. Students are expected to conduct themselves in exemplary fashion at all times and pay diligent attention to their studies. If the School Dean or the Registrar believes a student's

conduct is such that it is detrimental to the interests of the Institute, a recommendation may be made to the President to exclude the student from further attendance. The President has the final power to suspend or expel a student for disciplinary reasons, subject to the student's right to appeal this decision to a committee designated by the Board of Governors. A student who has been expelled or suspended for misconduct will not be admitted to the Institute grounds or buildings.

2. Acts of cheating, plagiarism and dishonesty will not be tolerated by this Institute, and the degree of punitive action may range from a written warning, to a withdrawal from the program. These penalties may also be applied to students who knowingly contribute to the act of dishonesty, cheating and plagiarism.

3. The Institute is not responsible for debts incurred by student organizations.

4. If through carelessness or negligence, a student damages Institute property, the student will be held responsible. If the damage is caused by students whose names are not known, the cost of repairing the damage may be assessed equally among all students enrolled at the Institute.

5. A student will not be permitted to borrow or remove any apparatus or tools except by written authority of the President or his delegate.

6. General supervision over all forms of entertainment given under the auspices of a student organization comes under the jurisdiction of the President.

7. It is the policy of BCIT to rely on the judgement of students to maintain a reasonable standard of dress and appearance. The choice of dress is left to the individual student, subject to the following considerations:

   (a) in some field trips and laboratory situations, safety considerations require that special head gear, shoes or other clothing, and other safety equipment must be worn;

   (b) where programs involve regular periods of scheduled experience, in industry or hospital for example, the student may be required to wear a uniform or otherwise dress himself/herself in the appropriate manner acceptable to the affiliating agency.

   Based on experience to date, BCIT faculty believe that there is a positive relationship between general dress standards and employment of graduates. Faculty are prepared to advise students in the area of acceptable attire.

8. Regular attendance in lectures, seminars and laboratory periods is required of all students. If a student is absent for any cause other than illness for more that 10% of the time prescribed for any subject, he/she may be prohibited from completing the course. In case of illness or other unavoidable cause of absence, the student should communicate immediately with the program head, stating the cause of absence. Special regulations governing attendance in clinical experience areas are prescribed by the School of Health Sciences.

   Due to the nature of Trades Training, regular attendance is critical for successful completion. Students failing to report absences to their departments, for five or more consecutive days, may be prohibited from completing the program.

9. Computer Ethics

"Code of Ethics" on Access to Computer Resources at the British Columbia Institute of Technology

In the following statement, a "user" is any person who makes use of any computer owned or operated by BCIT. A "password" is a code word or number which identifies a user to a computer; that is, knowledge of a password which is recognized by a particular computer allows a person to use that computer (just as knowledge of the correct combination allows one to open a safe).

Access to BCIT computer equipment is authorized only for those persons doing work for which that equipment was acquired. Users should be guided by the following:

(a) Do not attempt to discover other user's passwords, or to use any password discovered by chance. Take all reasonable precautions to prevent anyone from discovering your password. Report immediately any suspected "leak" of a password so that it may be changed. (Where two or more persons use the same password, which may be necessary on group projects, all those persons share responsibility for that password.)

(b) Do not attempt to discover or change any user's charges.

(c) Do not attempt to read or copy any information stored on the computer system unless explicitly authorized to do so. This includes information which has been stored by Computer Resources, by other computer users, by a commercial vendor or by any other party.

(d) Do not knowingly consume excessive resources.

(e) Do not use Institute computer facilities for non-institutional projects, or for personal or commercial purposes, unless written authorization has been received from the Information and Computing Committee.

(f) Do not move any computing equipment, and be extremely careful to avoid damage.

Users of the computer systems are cautioned that violation of the above rules may disrupt service to themselves and others. Furthermore, it could violate a copyright or other non-disclosure agreement into which BCIT has entered.

Computer Resources staff who have access to information owned by users of the system will treat all such information as strictly confidential.

BOARD OF GOVERNORS

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Edward Arnold Taylor, C.G.A.
Comptroller
Crestbrook Forest Industries Limited
Cranbrook

Vice Chairman:

Wynne Powell, Dipl.T. (Hons.), C.G.A.
Vice President, Marketing & Retail Technical Group
London Drugs Limited
Richmond

Jake Abrahams
Clearbrook Realty
Clearbrook

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Barristers & Solicitors
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United Fisherman & Allied Workers' Union
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Lett Tricky & Co. Chartered Accountants
Vernon

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West Vancouver

J. Basil Peters, Dipl.T., B.A.Sc., Ph.D., P.Eng.
Chairman and C.E.O.
Nexus Engineering Corp.
Burnaby

Frederick George Randall
Business Manager
International Union of Operating Engineers Loc. 115
Burnaby

M. Bernadet Ratsoy, B.Sc.N., M.Sc., R.N.
Vice President, Nursing
St. Paul's Hospital
Vancouver

Hilda Rizun
Smythe, Ratcliff & Associates
Chartered Accountants
Squamish

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Vancouver

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General Manager
Collins Manufacturing
Langley

Vinod Sood, B.Sc., C.A.
Chairman and C.E.O.
Finning Ltd.
Vancouver

Secretary to the Board:

Patricia Maertz

ACADEMIC AND ADMINISTRATIVE PERSONNEL

R.V. Murray, P.Eng., President
D.J. Svetic, P.Eng., Vice President, Education
P. Pick, B.A., M.L.S., Acting Vice President, Student Services and Educational Support
C.E. McKinley, C.A., Executive Director, Finance
B. Gillespie, Ed.D., Dean, School of Engineering
J. Kyle, B.A., M.B.A., Ph.D., Dean, School of Business
L.T. McNeely, R.I.A., M.B.A., Acting Dean, School of Trades Training
G.S. Eisler, M.A.Sc., P.Eng., M.B.A., Acting Dean, School of Health
B. Copping, B.Sc., M.Sc., M.D., Director, Medical Services
V. Karpinsky, B.A.(Hons.), Director, Student Services
M. Mazziotti, Dipl.T., Registrar
G. Weeks, B.A., M.L.S., Acting Institute Librarian

OFFICE OF THE REGISTRAR

The Office of the Registrar is located in Building 1A on the first floor, facing Willingdon Avenue.

This office is the Administration centre for all the related activities of the Registrar's office. It directs its efforts towards coordinating the major functions of Registration, Admissions processing, and Records keeping. The personnel in this office are part of a major link in the policy setting and implementation process of the Institute between the Administration, the Deans and the students, particularly as they relate to the student's progress through the Institute, from initial application to the final graduating ceremonies. Students may utilize this office in the case of an appeal or re-assessment of the marks process. The office has two student information/registration systems: ISIS (for all Technology and Part-time students) and SRS (for all Trades students).

Registration

This area is the Institute's first public contact and maintains a high profile for the Institute. We handle all general information enquiries and accept applications for Trades/Technology programs. Part-time students also register here: over the phone, in person and through the mail. Other activities include processing incoming mail and mailing out information, Office hours are from 0830 to 2030 Monday through Thursday, 0830 to 1630 on Friday, and from 0830 to 1230 on Saturday (except on long weekends).

Admission

This department accepts and processes applications for full-time Trades and Technologies, and for part-time Electronics, as well as handling enquiries about applications. Office hours are 0830 to 1300 Monday to Friday for admission enquiries. From 1300 on, enquiries should be directed to the Registration desk. Institute personnel are available from 0800 to 1630.

Records

The following services are provided by the Student Records Department:

1. Transcript requests
2. Verification of attendance
3. T2202A Tax Certificates
4. Graduation eligibility
5. Course credit evaluation
6. Certificate/Diploma processing

Office hours are 0830 - 1630 Monday to Friday.

Timetabling

The Timetabling Department produces the Institute's master timetables, including those for full-time technology programs, part-time trades and technology programs and full-time technology examinations. Handles day-to-day room bookings for meetings and other events.

Staff

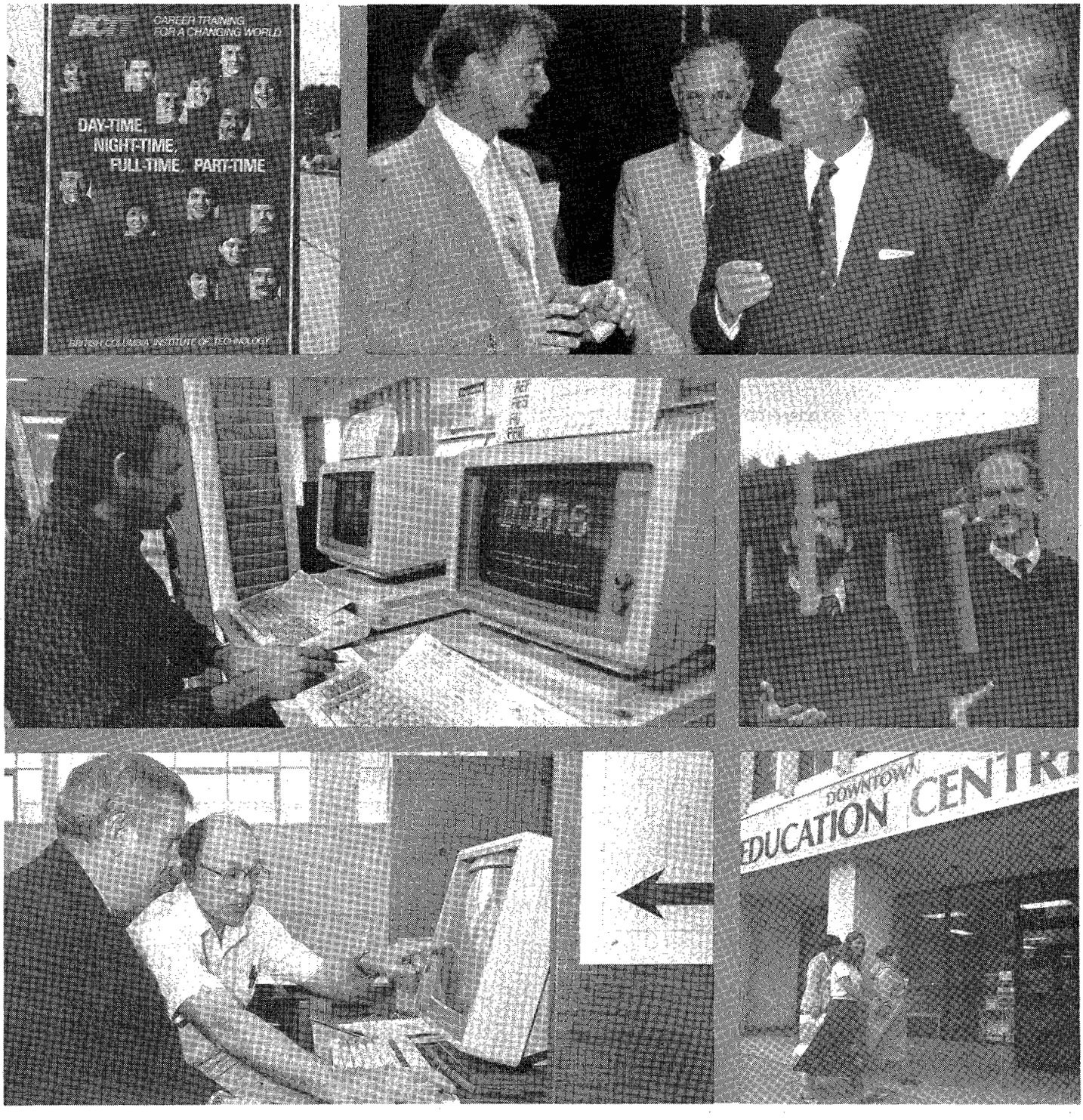
Mario Mazziotti, Dipl.T., Registrar
Michelle Philippe, Systems Assistant

Registration
Kelly Durkin, Supervisor,
General enquiries: 434-1610

Admission
Brenda Walton, Supervisor
Application enquiries: 432-8419

Student Records
Jeri Fostvelt, Supervisor
General enquiries: 432-8478

Timetabling
George Brown, Supervisor
General enquiries: 434-5734 (5386)


CAREER TRAINING
FOR A CHANGING WORLD
DAY-TIME
NIGHT-TIME
FULL-TIME PART-TIME
BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY
DOWNTOWN
EDUCATION CENTRE

BCIT Services

STUDENT SERVICES

The student Services reception area for Program Advising, Counselling and Financial Aid and Awards is located at the northwest corner, 2nd floor, Building 1A. Our offices are open from 0830 to 1630, Monday to Friday. For telephone enquiries, please call 434-3304.

Staff

Val Karpinsky, B.A.(Hons.), Director, Student Services
Sandy Mooney, Secretary
Muriel Shaw, Clerical Support
Janet Tucker, Clerical Support
Lisa Boberg, Clerical Support

Program Advising

Program advisors provide information, through an interview process, about programs, learning and career opportunities for full and part-time studies.

Program advisors may be seen on a drop-in basis or by appointment, in addition to telephone enquiries. We look forward to hearing from you by telephone — 434-3304, by mail, or in person in Student Services, 1A Building, 2nd Floor.

Program Advisors

Raelene Rowe, B.A., Coordinator
Pat Awarau, B.A.
Anne Bullinger
Mandy Klepic, B.A.
Ann McNaughton, Cert.

Program Advisors - Part-time Studies

Chris Lloyd, Dipl.T., Business
Sheri Dawson, B.A., Acting, Engineering Technology & Trades

Career Resource Centre

Located in Student Services, 2nd floor, 1A Building, the Career Resource Centre will help you with career planning, occupational information, educational and training information, and student life. Video/slidetapes of career programs are also available. You may come in to browse through our material or to view career information. The Centre is open from 0830 to 1630 weekdays. Our program advisors are there to answer your questions and our career counsellors are available to help you develop your plans.

Counselling

Counselling Services offer a free and confidential career counselling service to all current and prospective BCIT students. Professionally trained counsellors will assist students in selecting a career, making a career change, re-entering the work force, or adjusting a career to fit a chosen lifestyle. In addition, group information sessions regarding Health, Business and Engineering career options are offered on a regular basis. Contact Student Services reception for details.

Counselling Services, in conjunction with Part-time Studies, offers several Career Search Workshops during the school year. These workshops are four sessions (12 hours) long and are designed primarily for prospective students who have been in the work force at least two years. Participants examine their career paths and lifestyles in terms of direction and personal satisfaction. Registration for Career Search Workshops is handled through Part-time Studies at 434-1610.

The Special Needs Counsellor provides persons with disabilities and special needs with career, educational and personal counselling assistance. The Special Needs Counsellor also coordinates services for these students and facilitates their participation in training.

Group Workshops for BCIT students are offered from time-to-time throughout the year. Workshops include out-of-towner and adult-returning-student orientation, time management, stress management, coping with test anxiety, exam preparation and introduction to assertiveness.

For further information about Counselling Services at BCIT, contact Student Services reception in Building 1A, 2nd floor, or telephone 434-3304.

Counselling Staff

Stu Gibbs, B.A., M.S.Ed., Counsellor/Coordinator,
Liaison Engineering
Heather Hyde, B.A., M.A., Counsellor/Counselling Psychologist,
Liaison Engineering
Howard Peto, B.S.A., M.Ed., Counsellor/Liaison Business
Jean Spence, B.A., M.Ed., Special Needs Counsellor,
Liaison Health

Financial Assistance for Part-time Students

Limited financial assistance is available to students attending part-time programs or full-time programs of short duration. Both types of assistance described below are based on financial need.

Part-time Loans – Trades and Technology Students

Part-time loans are available to students taking a course load that represents 20% to 59% of a full program of studies. At BCIT, most full-time programs include 30 hours of classes per week. This means that a BCIT student taking courses over a twelve week period must register in at least 6 hours per week to be eligible for a part-time loan.

Part-time loans are interest-bearing from the date of negotiation and the first payment is due 30 days after you negotiate the loan.

Deadline: Students must submit their part-time loan application to Financial Aid no later than the end of the second week of classes.

NOTE: The above information is subject to change.

Harry H. Stevens Memorial Bursary – Technology Students Only

The Kiwanis Club established this fund to provide financial assistance to students who are attempting to better themselves by attending part-time studies. Applicants must have resided in British Columbia for at least one year and be taking a course to upgrade skills or retrain in a technical, supervisory or management area.

Deadline:
August 19 – fall term
December 16 – winter term
March 17 – spring/summer terms

For further information telephone 432-8555 or visit Student Service, Building 1A, second floor. Office hours are 0830 to 1630, Monday to Friday

Staff

Jennifer Orum, B.Ed., M.A., Coordinator
Jim Anderson, B.A., Senior Advisor
Cathy Schweers, Advisor, Trades
Hanne Logan, Financial Aid Assistant, Trades
Angie Chan, Advisor, Technologies
Avalon Tagami, Advisor, Technologies
Mary-Ann Moysiuk, Financial Aid Assistant, Technologies
Janice Budge, Financial Aid Assistant, Technologies

LIBRARY SERVICES

Part-time students are eligible for the same library privileges as full time students. To obtain a card, present ID and complete an application form at the library circulation counter.

The BCIT library is one of the province's major technological information centres. Holdings include books, periodicals, pamphlets, maps, microcomputer software, films, videos and other audiovisual materials. Special strengths are its collections of technical reports, standards, case law and Statistics Canada publications; B.C. and Federal statutes; and company information sources.

The library also provides film preview books, video players, microfilm viewers and microcomputers for use by patrons.

Library Hours

September - May (subject to change)

Main Library
Monday - Thursday ..... 0730 - 2230
Friday ..... 0730 - 1700
Saturday and Sunday ..... 0900 - 1700

Summer hours vary – check for times.

For loans, overdue and hold information and library hours, phone 432-8370.

For reference assistance and library holdings phone, 432-8371.

Overdues, Fines, Replacement Policies

The purpose of fines is to protect the rights of all library patrons and provide an incentive to return books promptly. Notices are mailed out. Overdue loans result in the blocking of further loan transactions. A nonrefundable fee is levied for overdue material that is not returned. The fee covers the purchase and processing of a replacement copy. No statement of marks, diploma or certificate will be issued until the student settles all financial obligations for overdue material. The rates are 50¢ per day, and 50¢ per hour for reserve material.

Faculty and Staff

Paula C. Pick, B.A., M.L.S., Institute Librarian
Gerry Weeks, B.A., M.L.S., Acting Institute Librarian and Information Services Coordinator
Margot Allingham, B.A., M.L.S., Reference Librarian
Yu-Mei Choi, B.S.Sc., M.L.S., Cataloguer
Ana Ferrinho, B.A., M.L.S., Reference Librarian
Anthony Kelly, B.A., M.L.S., Reference Librarian
Frank Knor, Dipl.T., B.Ed., B.L.S., Reference Librarian
Merilee MacKinnon, B.A., M.L.S., Head Cataloguer/DOBIS Project Leader
Robert A. Roy, B.A., M.A., B.L.S., Technical/Public Services Coordinator

FIRST AID

First aid attendants are on call as follows:

Burnaby North Campus

Monday - Friday (Attendant located in Building #22)
0700-2200 Emergency: Local 8820
Non Emergency: Local 8872
Voice Pager Number: 9-667-2052

Saturday (Attendant located in Building #22)
0800-1500 Emergency: Local 8820
Non Emergency: Local 8872
Voice Pager Number: 9-667-2052

Burnaby South Campus

Monday - Friday
0830-1630 Local 8608 or 5609

NOTE: After 1630 Monday - Friday and on Saturday, call north campus attendant as above.

When first aid attendants are on duty:
(a) If injury or health problem is life threatening or if patient is otherwise immobile:
  (i) Call attendant as above giving precise location of patient;
  (ii) Call ambulance at 872-5151 advising them to enter the campus via Willingdon/Goard Way;
  (iii) Call security – pager #735-5201, wait for beep tone, give location of patient and request security to meet ambulance at Willingdon/Goard Way entrance and escort ambulance crew to patient.
(b) If patient is mobile, escort to first aid attendants at above locations.

When first aid attendants are not on duty:
If injury or health problem is life threatening or if patient otherwise requires medical treatment call ambulance at 872-5151.

Sea Island Campus

Monday - Friday, 0800-1600

CAMPUS FOOD SERVICES

The Food Training Centre – Building 2B

Snack Bar – Monday to Friday 0700 to 1330;
Cafeteria – Monday, Wednesday and Friday 0900 to 1530; Tuesday and Thursday 0900 to 1830

The Campus Cafe – Breezeway of Building 2N

The Campus Cafe, is open **Monday through Thursday from 0700 to 1000** for breakfast. Lunch is served from **1100 to 1330** and dinner from **1600 to 1930**. The Campus Cafe has a large non-smoking area. **Friday** there is no evening service and **closing time is 1530. Saturday** breakfast **is from 0800 to 1000 and lunch from 1100 to 1330.**

Night School Service

Mobile coffee service is available in buildings 1A and 2N, Monday through Thursday from 1915 to 2015, for the convenience of those attending night classes. The Campus Cafe remains open until 2100 Monday through Thursday.

Forster's

Forster's operates two cafeterias on the north side of the campus. The J.W. Inglis building cafeteria is located on the second floor – at street level. It is open: Monday to Thursday 0630-2100, (the kitchen closes at 1900); Friday 0630-1500; Saturday 0800- 1230. The Electrical Training Centre cafeteria is open every day at the same times, Monday - Friday, as the J.W. Inglis cafeteria and closed on Saturday.

Bakery and Retail Meats Outlet – *Building 2B*

A variety of fresh baked goods is available from the commercial baking course for sale to staff, students and public.

On the meat counters you'll find a wide variety of beef, veal, lamb, pork and deli products from the Retail Meat Processing and Sausage Making and Smoked Meats programs. Freezer orders are also taken at the counter as well as special orders for cakes, pastry, meat and cheese trays.

The SAC

The Student Association operates a cafeteria in the SAC serving a variety of salads, sandwiches and hot foods. Vending machines are located at several points around campus. These services are available from September to the end of June. The summer schedule is not confirmed at time of printing.

TRANSIT

The BCIT campus has frequent daily bus service providing direct access to the campus. In addition, the Sky Train rapid transit service is a short bus ride from the campus. The cost of monthly transit passes varies according to zones travelled; passes are available from "This'n That" stores on campus.

For information about bus routes, fares and schedules within the Greater Vancouver transit system, call the Metro Transit Information line at 324-3211. You can also pick up bus schedules for Greater Vancouver in the Maquinna Residence.

PARKING

All vehicles parking on campus, day or night, must display a valid Institute parking permit. Paid parking is in effect 24 hours a day, year round. Parking and traffic is administered and controlled by the Safety and Security Department, Building 2T, phone 432-8719. Parking Office hours are 0700-1600, Monday to Friday. Improperly parked vehicles or vehicles not displaying valid permits are subject to impoundment off campus at the owner's risk and expense. License numbers of impounded vehicles are posted at the entrance to the parking office, Building 2T together with the name and location of the towing company., Persons parking on campus are encouraged to read the Parking and Traffic Regulations available at the parking office. Vehicles should be kept locked at all times. BCIT does not accept liability for theft from, or damage to, vehicles parked on campus.

Parking permits can be purchased at the parking office 0700-1600, Monday - Friday, year round. Sales of parking permits at other times will be announced in the campus media.

Parking for the Physically Challenged

Special parking arrangements are available by contacting the parking office.

Parking Violations

To avoid vehicle impoundment, please note the following: ensure that a valid permit is displayed at all times while parked on campus day or night; park only in areas authorized by permits; do not park in fire lanes, blocking fire hydrants, along yellow curbs, on roadways or anywhere not designated for parking or that impedes free traffic flow/pedestrian safety; do not block off another parked vehicle; do not use parking permits fraudulently.

Vehicle Assistance

Vehicle breakdowns or other problems should be referred to security staff who will assist if possible.

CANADA EMPLOYMENT AND IMMIGRATION CENTRE

CEIC is located in Room 222 of building 1A, above the Bank of Commerce.

The office has two distinct functions. The first provides a placement service to certificate and diploma students in the technologies; this includes summer and part-time employment for undergrads as well as permanent work for alumni, who are welcome to use the service for two years after graduation. To assist new graduates, the Centre provides an on campus recruiting program from January to June for employers to interview students for career positions, prior to graduation. The second function involves referral, documentation and maintenance of students into places purchased on their behalf by Employment and Immigration Canada.

The Centre is open throughout the year. Phone 432-8333 for more information.

Staff

Seann Lyncaster, Branch Manager

BOOKSTORE

The BCIT bookstore is located at the south end of the campus on the ground floor in the southeast corner of Building 2D. It sells required textbooks and educational material for BCIT courses. Textbook lists may be consulted in the bookstore. In addition to textbooks, an extensive selection of school, drafting, engineering and computer supplies are available. Personal computers may be purchased at special educational prices by full-time students. Special orders for books may be place. The bookstore is open from 0800 – 1600 hours throughout the year, Monday to Friday. Extended hours of operation are offered at the beginning of each term. A schedule of dates and extended hours is posted in the bookstore prior to the commencement of each term.

Textbooks and educational material for courses at the Downtown Education Centre are available at the bookstore outlet at that location. This outlet is open at the start of each term. Telephone 432-8477 for hours of operation.

Used Textbooks

The BCIT bookstore schedules used book buybacks each term. Textbooks required for that term are purchased from students for up to 50% of the current new book price. Buyback dates are posted around the Institute a few weeks prior to the event.

RECREATION AND ATHLETIC SERVICES

BCIT offers a variety of indoor and outdoor recreational facilities designed to appeal to most students. These include four racquetball/handball courts which now accommodate the new sport, wallyball, and two squash courts; an excellent gymnasium accommodating eight badminton, two basketball and three volleyball courts, which is also used for many other sports and recreational activities. Our activity room is equipped with a universal gym, free weights, exercise area, table tennis, a ballet barre and much more. Four tennis courts, two sports fields, a fitness trail and exercise stations, as well as a 396 metre track offer excellent outdoor recreation. Complete shower facilities, change and locker rooms for both men and women are included.

Hours of Operation

September - May:	Monday - Thursday 0645-2300
	Friday 0645-2100
	Saturday 0900-1900
	Sunday 0900-2100
June- August:	To be announced.

Facility hours are subject to change, check the weekly schedule posted outside the Recreation and Athletic Equipment office.

Facilities and Services – How to Use Them – All students, staff and alumni are encouraged to use the recreation facilities. Lockers, towel and laundry services are available to rent. Most equipment is provided on loan; current BCIT identification is mandatory. There is a nominal rental fee for balls, birds and racquets. There are many structured programs to participate in as well as plenty of recreation time when the gym is available for your own activity. Check the facility schedule for open and programmed time.

Guests – Students and staff may bring one guest into the facility at any time. Guests cannot sign out equipment and are asked to follow the facility regulations.

Regulations – The Recreation and Athletic Services staff are responsible for the facility. **Smoking is not allowed in any part of the recreation facility.** Alcoholic beverages, including beer and wine, will not be allowed in the recreation facility unless approved by the Institute's chief executive officer and the appropriate permits obtained. Proper attire and accessories, shorts and shirts or sweat suits are highly recommended and clean, non-marking gym shoes (white soles preferred). Safety eye protection is highly recommended while playing squash or racquetball.

STUDENT ASSOCIATION

The Student Association is the independent student union at BCIT. It provides most of the non-academic services and nearly all of the recreation and entertainment on campus.

All BCIT students, whether full-time or part-time, automatically become members of the SA upon registration. The student activity fee, which is paid as a small addition to BCIT course fees, goes directly to the SA to help pay for the recreational and social activities provided on campus.

Another portion of the fee goes to pay for the SA's new Campus Centre, a multi-million dollar recreational and social complex organized and financed by the SA. Phase one, containing squash and racquetball courts, is now complete. Fund raising is under way for the new Campus Centre.

LOST AND FOUND

Please refer enquiries to Safety and Security at 432-8356. The Lost and Found is located in Building 1A, Room 130. Hours are 0800-0900 and 1200-1300, Monday to Friday.

LOCKERS

Lockers at BCIT are available to students on a first-come basis, except in technologies with special requirements such as Forest Resources, Surveying and Building. Students should locate an unreserved locker near their technology and put their lock on it. Lockers are situated throughout the Institute on each floor of most buildings. Lockers must be vacated at the end of each academic year, or no later than May 31. The Institute will not accept responsibility for loss or damage to a student's personal property.

BANKING

Banking services on campus are available through the Canadian Imperial Bank of Commerce situated about mid-campus in the 1A Building, north end. The branch is well acquainted with Canada Student Loans, so you may choose to negotiate your loan on campus. Out of town students should bring enough money to buy books, pay fees and the first month's rent. This can be in the form of a bank draft, travellers cheques, or interbranch banking can be arranged before students leave their home towns. For your convenience, at the same location, there is an Instant Teller Machine available with Interac Network.

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY
3700 WILLINGDON AVENUE, BURNABY, BRITISH COLUMBIA, CANADA V5G 3H2 • TELEPHONE: AREA CODE (604) 434-1610

PART-TIME STUDIES REGISTRATION

PERSONAL DATA

Social Insurance Number	Student Name (Last Name, First Name)			
Date of Birth (Month / Day / Year)	Sex ☐ Male ☐ Female	Marital Status ☐ Single ☐ Married	Country of Citizenship ☐ Canada ☐ Other:	Status (If Not Canadian) ☐ Landed Immigrant ☐ Student Authorization
Mailing Address (Number and Street)				
City/Town	Prov.	Country	Postal Code	
Home Phone Number	Company Name	Company Phone Number		

EDUCATIONAL RECORD

	NAME AND LOCATION	YEARS COMPLETED	PROGRAM/ DEGREE	CUMULATIVE CREDITS/GPA	PERIOD OF ATTENDANCE	FULL-TIME/ PART-TIME
LAST HIGH SCHOOL						
COLLEGES AND/OR INSTITUTES						
UNIVERSITIES						

PROVINCIAL EXAM NUMBER:

COURSE REGISTRATION

Course Number	Course Ref. Number (CRN)	Course Title	Course Cost(s) Fee	Course Cost(s) Special Fee	Start Date Month	Start Date Day	Start Date Year	Site
		TOTAL FEES	+	=				

Payment of Fees: ☐ Full Fees Paid by You ☐ Full Fees Paid by Employer (Approval Attached) ☐ Special Arrangement (Approval Attached)

FOR "MAIL IN" APPLICATIONS

Paid By: ☐ Cheque/Money Order (Enclosed)
☐ Visa
☐ MasterCard

Card No.:

Issue Date: Month Year

Expiry Date: Month Year

TOTAL AMOUNT PAID

$

Signature: _____

CONSENT AND ACKNOWLEDGEMENT

I hereby consent to be bound by and observe all applicable rules, regulations, policies and procedures of BCIT and any amendments made thereto from time to time. I am aware that a copy of all such rules, regulations and procedures is available for review at the office of the Registrar for BCIT and I acknowledge that it is my responsibility to review the same.

_____ Applicant Signature

_____ Date

Please complete and return to BCIT Registration, 3700 Willingdon Avenue, Burnaby, B.C. V5G 3H2

ASR-1A (R. 88:06)

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3700 WILLINGDON AVENUE, BURNABY, BRITISH COLUMBIA, CANADA V5G 3H2 • TELEPHONE: AREA CODE (604) 434-1610

PART-TIME STUDIES REGISTRATION

PERSONAL DATA

Social Insurance Number	Student Name (Last Name, First Name)			
Date of Birth (Month / Day / Year)	Sex: ☐ Male ☐ Female	Marital Status: ☐ Single ☐ Married	Country of Citizenship: ☐ Canada ☐ Other:	Status (If Not Canadian): ☐ Landed Immigrant ☐ Student Authorization
Mailing Address (Number and Street)				
City/Town	Prov.	Country	Postal Code	
Home Phone Number	Company Name	Company Phone Number		

EDUCATIONAL RECORD

	NAME AND LOCATION	YEARS COMPLETED	PROGRAM/ DEGREE	CUMULATIVE CREDITS/GPA	PERIOD OF ATTENDANCE	FULL-TIME/ PART-TIME
LAST HIGH SCHOOL						
COLLEGES AND/OR INSTITUTES						
UNIVERSITIES						

PROVINCIAL EXAM NUMBER:

COURSE REGISTRATION

Course Number	Course Ref. Number (CRN)	Course Title	Course Cost(s) Fee	Course Cost(s) Special Fee	Start Date Month	Start Date Day	Start Date Year	Site
		TOTAL FEES	+	=				

Payment of Fees: ☐ Full Fees Paid by You ☐ Full Fees Paid by Employer (Approval Attached) ☐ Special Arrangement (Approval Attached)

FOR "MAIL IN" APPLICATIONS

Paid By: ☐ Cheque/Money Order (Enclosed) ☐ Visa ☐ MasterCard

Card No.:

Issue Date: Month Year

Expiry Date: Month Year

TOTAL AMOUNT PAID $

Signature: _____

CONSENT AND ACKNOWLEDGEMENT

I hereby consent to be bound by and observe all applicable rules, regulations, policies and procedures of BCIT and any amendments made thereto from time to time. I am aware that a copy of all such rules, regulations and procedures is available for review at the office of the Registrar for BCIT and I acknowledge that it is my responsibility to review the same.

_____ Applicant Signature

_____ Date

Please complete and return to BCIT Registration, 3700 Willingdon Avenue, Burnaby, B.C. V5G 3H2

ASR-1A (R. 88:06)

Part-time Studies

This calendar contains details of all part-time studies programs, courses and workshops offered by the Schools of Business, Engineering Technology, Health Sciences and Trades Training at the British Columbia Institute of Technology.

Suggested programs of study leading to the granting of Certificates and Diplomas are described, which offer the student both an educational goal and a valuable credential for employment and career advancement.

ACADEMIC TERMS

Term 1 (Fall) September to December
Term 2 (Winter) January to March
Term 3 (Spring) April to June
Term 4 (Summer) July, August

ADMINISTRATIVE PERSONNEL

School of Business

Lorne A. Fingarson, B.Comm., Director
Maureen Palfreyman, B.A., M.S.W., Ph.D. (A.B.D.), Program Head, Native Programs
K. Douglas Smith, B.A., M.B.A., Program Head, Part-time Studies and Seminar Centre (Access Centre)
Regina Trineer, Program Administrator

School of Engineering Technology

Marv Woolley, Dipl.T., A.Sc.T., Acting Director

School of Health Sciences

Kathleen Bach, B.A., Director
Moira Barnetson, R.N., Program Coordinator
Sonia Williams, B.A.(Hons.), M.Ed., F.S.R., Program Coordinator

School of Trades Training

Marv Woolley, Dipl.T., A.Sc.T., Acting

ADMISSION

Part-time Studies courses are taught at a level which assumes students have completed Senior Secondary school (Grade 12). Some courses have specific prerequisites or special conditions for entry; these prerequisites or conditions are presented with each course description in this calendar. Proof of prerequisite completion must be shown at the time of registration.

Applicants who are not Canadian citizens, must provide official proof of Landed Immigrant Status or a valid Student Authorization.

Registration

Registration is course-by-course on a first come, first-served basis. Students must complete a registration form and return it by mail or in person. Mail registration should be forwarded to the Office of the Registrar.

Students may register in person at the Burnaby Campus, or at the Downtown Education Centre. The recommended deadline for registration in person is 2-4 weeks before classes commence.

Payment of fees must accompany the registration form. Failure to do so may result in cancellation of registration. There is a $15. charge for all cheques returned NSF. When student fees are to be paid by the employer, written authorization on company letterhead must accompany the registration form.

NOTE: Students who wish to register in a clinical course in Health Sciences must apply to Health Part-time Studies and receive approval prior to registering in the course.

Late Registration

Late registrations are accepted if space is available. Students must obtain written permission from the instructor before registration will be accepted after the first two sessions of a course.

Cancellation and Restricted Enrollment

The Institute will make every effort to offer all courses as listed in the calendar. Nevertheless, the Institute reserves the right to limit enrollment, to select candidates, to cancel courses, to combine classes or to alter time or date of instruction, without prior notice. Students must fill in a refund form or transfer paid fees to another course, when a course is cancelled.

Course-by-course Registration

Students may register in courses given in full-time programs subject to the approval of the associate dean and space being available. A student making application for part-time day classes must obtain the signature of the technology head and the instructor of each course, using the form "Day Course-by-course Registration" available from Student Records. Fees must be paid upon registration.

Part-time day applicants to the ElectronicsTechnology are not required to obtain signatures from technology departments. Completed part-time day applications must be submitted to the full-time admissions office to determine prerequisite completion and seat availability. Fees must be paid upon acceptance into the part-time day program.

COURSE FORMAT

Credit and non-credit courses and seminars are offered in a variety of time frames and formats throughout the year at the Burnaby Campus, the Downtown Education Centre and in Surrey.

The most common course formats are:

Total Hours	Course Format
18	6 weeks, 1 night/week Weekend, 2 1/2 days
36	6 weeks, 2 nights or one day/week 12 weeks, 1 night/week 1 week (5 days)
54	18 weeks, 1 night/week 9 weeks, 2 nights/week
72	12 weeks, 2 nights/week 24 weeks, 1 night/week 2 weeks (10 days)
90	30 weeks

Guided Learning Courses in Health Sciences theory are offered through Self Study with telephone tutoring.

Clinical courses in Health Sciences are offered in cooperation with hospitals and clinical agencies in various centres in the province.

Some courses travel – that is they are available upon request at centres throughout B.C. Call 434-5734, ask to speak to the appropriate department head or call the Downtown Education Centre at 687-4666, for information on courses and seminars of interest to you.

FEES

Payment of fees must accompany the registration form. Failure to do so may result in cancellation of registration. There is a $15. charge for all cheques returned N.S.F.

Fees are subject to change each academic year. Fee information is available in our advertising supplements and from registration locations. All fees must be paid in full at the time of registration. Payments can be made by cheque, money order, cash, Mastercard or VISA. Payments may also be made by mail, in person or by using the drop box in the cashier's area. See page 13 for information on financial assistance for part-time students.

Miscellaneous Fees

Please note the following miscellaneous fees payable for the academic year 1988/89.

NSF/returned cheques	$ 15.00
Duplicate diploma/certificate	50.00
Duplicate tax receipt	10.00
Duplicate T2202A	10.00
Challenge exam fee	*Cost of course*
Reinstatement/late fee charge	50.00
Reassessment of appeal or exam	50.00 per course
Reassessment of marks	25.00 per course
Transcript of marks	5.00 for first copy and $1.00 for each additional copy
Course transfer/change charge	15.00 (Part-time Studies courses only)
Refund processing charge	25.00 (Part-time Studies courses only)

Cashiers Hours

The Casher's Office is open from 8:30-16:30 Monday to Friday throughout the year. *Extended hours of operation are offered at* the beginning of each term and during peak periods.

Refunds

On Withdrawal: students who withdraw from a part-time course may be granted a refund provided that the "Application for Refund" form is completed and submitted to the registration desk on or before the prescribed deadline date for refunds. It is the *student's responsibility to ascertain refund deadline dates.* This information may be obtained at the registration office.

A non-refundable processing fee of $25.Subject to change (1989/1990), is withheld for each course from which a student withdraws.

On Cancelled Courses: Fees for courses cancelled by the Institute are refunded in full unless students re-register in another course within the same term, in which case the fees are applied to the other course fee. To ensure that your refund is processed, please complete an official Application for Refund form.

Refund Deadline — Important

A full refund less $25. will be made within the following guidelines:

Course Duration	Deadline Dates
over 4 weeks	Prior to the 2nd night of class.
4 weeks and under	1 week prior to the class start date.
Distance Education	Before material has been sent.

Tax Receipts – (1988/89) subject to change.

An official tax receipt will be mailed by the Finance Office on or before February 28. To allow for normal mail delivery, students should wait until March 31 before contacting the Finance Office if a tuition fee tax receipt has not been received. A charge will be levied for duplicate receipts.

NOTE: To ensure that the receipts are sent to the correct address, students should notify the Student Records Office immediately of any changes of address.

Additional Expenditures

Textbooks, Instruments and Supplies

Costs vary according to the program and are approximately $350 to $800. The Institute bookstore carries a complete line of drafting and writing supplies. Students are advised not to make any purchases until they have received a book list showing the required texts. Some technologies require purchase of a pocket *calculator costing approximately $150 to $250.*

TRANSFER FROM FULL-TIME TO PART-TIME STUDIES

A student transferring to part-time studies from a full-time diploma program may be granted credit exemption for all courses successfully completed prior to withdrawal from full-time studies. A student who fails one or more subjects in the full-time program is encouraged to consider part-time studies programs.

EXAMINATIONS, GRADING AND MARKS

Formal examinations are written at the end of each term. Students are required to take the examinations for each course at the time set by the Institute. Students unable to write examinations due to special circumstances should first contact their instructor; then, if necessary, consult the Associate Dean.

Challenge Exams for Credit

Students may acquire credit recognition for knowledge and skills obtained through independent study and/or work experience. By challenging a course, students claim they already have the knowledge and abilities to be gained from taking the BCIT course. Because of the learning format of some courses, not all are considered challengeable.

Where approval has been granted to challenge a course, a formal evaluation procedure will take place. The student's abilities will be assessed through a written and/or oral examination, research paper or other means, as the evaluator sees fit. Challenge credit *will be recorded only after the student has completed a specified* number of credits of course work at BCIT. Only a specified number of challenge credits will be allowed for each program.

NOTE: A total of 15 challenge credits will be allowed for each *certificate program.*

Challenge credit is not considered as work completed at BCIT, but when a course is successfully challenged the number of credits required for a certificate will be reduced. If a student is successful the Code of CH EXAM will appear beside course name, and a grade "C" is recorded.

Fees to challenge a course must be paid before the formal evaluation takes place. The fee for challenge is the cost of the course. Application Forms to challenge a course are available in Student Records.

Return of Examinations

Final examinations are not normally returned, however, part-time students wishing to have their examination papers returned should make arrangements with the course instructor.

Determination of Standing

Final standing is determined based of term progress and examination results.

80 - 100%	First Class Standing
65 - 79	Second Class Standing
50 - 64	Pass Standing
0 - 49	Failure

Failure:	%F	- less than 50% except some course(s)/ program(s) may have a fail grade greater than 50% as outlined in calendar publications.
	F	- formal withdrawal after official term deadline.
	OF	- unofficial/unapproved withdrawal.
Withdrawal:	W	- approved official withdrawal from a course/ program.
Satisfactory:	S	- course requirements fulfilled, no % mark assigned.
Unsatisfactory:	U	- course requirements not fulfilled, no % mark assigned.
Course Credit Granted:	C	- recognition of approved equivalent studies outside BCIT.
		- successful Challenge Exam.
Course Exemption:	EC	- recognition of previous course completion at BCIT (used only when course numbers differ and/or program goal changes).
Aegrotat:	%A	- pass standing granted to a student who has a good term record but has an incomplete evaluation due to illness or other extenuating circumstances.
Adjudicated Pass:	AP	- course standing raised to pass level based upon overall performance, permitting the student to continue in the program or to graduate.
Provisional Pass:	%PP	- standing granted on the basis that the student will reach a pass standing in a continuing relevant subject area; will be changed to (P)ass or (%F)ail depending on success in the relevant continuing subject area.
Provisional Pass Fulfilled:	P	- provisional pass conditions achieved.
Not Complete:	N	- course requirements not complete.
Audit:	AU	- attended course, no credit given. Student is not formally evaluated and does not write examinations.
Attended Non Examined Course:	X	- no examination or grade given for this course.
Outside Source Grade:	R	- refer to outside source for student achievement.

Marks Distribution

Students will not be provided with marks prior to the issuance of a Statement of Marks by the Registrar's Office. Marks will not be released over the telephone.

Transcripts resulting from final examinations are mailed to graduating students by the Office of the Registrar. All other students will receive a Statement of Marks for the term.

Financial Obligation to the Institute

No Statement of Marks, transcript, diploma or certificate will be issued until the student has cleared up all financial and other obligations to the Institute such as tuition fees, library fines, rent. These documents may also be withheld on other grounds as directed by the Board of Governors.

Marks Reassessments

It is the policy of the Institute that students shall be dealt with fairly in all decisions affecting their academic standing. A student who is not satisfied with the final mark awarded is cautioned that the grade has been reviewed carefully and, aside from clerical error, reassessments seldom result in a higher mark.

Students wishing a reassessment of their academic standing must first discuss the matter with the instructor responsible for the initial assessment and, if dissatisfied with the result of that discussion, with the Technology Associate Dean.

Failing a resolution of the problem, students may submit a Request for Reassessment on the Institute form available from the Office of the Registrar. **All parts of the form must be completed and must reach the Registrar's Office within 7 school days after the start of classes in the next term, or within 30 calendar days after the mailing of marks from the Institute, whichever is less.**

There is a fee of $25 for each subject reassessed. If the mark or standing is adjusted favorably, the fee will be refunded.

The Registrar will inform the student by letter of the result of the reassessment.

Marks Appeals

A student who is dissatisfied with the outcome of a reassessment may appeal the decision to the President.

The student must first discuss the problem with the Dean of the appropriate School. The Dean must provide the Registrar with a written statement confirming the outcome of the discussion.

If the student then decides to proceed with the appeal, the student must complete and sign a Request to Appeal form and submit it to the Registrar's Office, along with the $50 fee, **within two weeks of the mailing of the reassessment result to the student.**

An Appeal Committee will be formed to deal with the appeal according to procedures approved by the Educational Council for that purpose.

The President will inform the student by letter of the result of the appeal.

NOTE: A student who has been permitted to audit classes during the reassessment may continue to do so during the appeal.

Auditing

A student may audit a course with the permission of the instructor. An audit student is not formally evaluated and does not write examinations. However, the student is expected to take an active part in classroom discussions and laboratory exercises, maintain satisfactory attendance and pay the full course fee.

An auditing student does not receive credit for the course, but will receive a Statement of Marks with "Audit" indicated. A student may change his status in the course from audit to credit, with written permission of the instructor during the course, but ***will not*** receive credit by applying after the course is completed.

Attendance

See Conduct and Attendance, page 7.

COURSE CREDIT

A credit is defined as one classroom hour per week over a 12-15 week term. Therefore, a course taught for three hours per week for 12 weeks would normally be assigned three credits.

It is recognized that in assigning credits to courses, other criteria are also considered, such as:

- course content
- learning outcomes
- whether it is a lab (clinical or practicum).

Advanced Placement Categories

1. **Course Exemption**
   Where the individual course completed at BCIT is equivalent in course content and assessment to the same, or another BCIT course that is required within the program from which certification is sought.
2. **Course Credit**
   Where the individual course(s) and/or experience is equivalent in content and assessment to a BCIT course that is required within the program from which certification is sought, for:
   (a) course(s) completed at another recognized post-secondary institution;
   (b) approved course(s) that have been completed within or sponsored by a company, government body, or organization;
   (c) documented experiential learning validating mastery in a course based on approved academic evaluation criteria.
3. **Unassigned Credit**
   Where a course-to-course equivalent cannot be established, but the subject matter is credit-worthy toward the program for which certification is sought. This credit may be used as an elective credit (where applicable). Unassigned credit may be either in a subject area, eg. Economics — 3 credits, or in a program area, eg. Civil and Structural — 3 credits. Unassigned credit totals may not exceed the elective totals in a program of studies.
4. **Challenge Credit**
   Where approval has been granted to challenge a course, a formal evaluation procedure takes place. Students' abilities will be assessed through written and/or oral examination, research paper, or other means. As recommended by the Technology, Challenge Credit will only be recorded after the student has completed a specified number of BCIT credits, and only a specified number of Challenge Credits will be allowed for each program.

   Challenge Credit is not considered as work completed at BCIT, but when a course is successfully challenged, the number of credits required to complete a program are reduced.

Transfer Credit

Transfer credit is a means whereby a student may acquire recognition for academic work completed at another recognized post-secondary institution **not previously used as part or whole requirement for a diploma or degree which has been conferred or granted**. The course work for which the student is requesting transfer of credit must be related to the student's program of studies at BCIT. Credit for 50% of the course work required for a Certificate must be completed through BCIT.

Transfer Credit Application Procedure

Students must apply in writing to a program advisor and must provide the following:

1. An official transcript from the institution where the courses were taken, photocopies ***are not*** acceptable;
2. A course description which outlines:
   (a) the topic covered
   (b) the number of hours of classroom and laboratory study
   (c) the types and number of assignments and examinations completed
   (d) the name, author and publisher of the textbooks used.
3. A completed application form for program approval identifying the certificate program, courses to be completed at BCIT, and the courses for which transfer credit is requested.

NOTE: It is the responsibility of the student to provide the documentation for a transfer credit application. Failure to submit the required documentation may result in rejection of the transfer credit application.

Please allow 4-6 weeks for processing.

"In-House" Training for Credit toward BCIT Certificates

BCIT students may obtain transfer credits for approved courses taken within, or sponsored by a company, government body or organization associating with BCIT in a joint development program for the student-employee.

Credit for in-house courses may be applied to specific BCIT courses or block credit may be granted for an approved program of study; this may be available in some programs. Please check with a program advisor.

This program is an additional service to students and recognizes that many worthwhile "in-house" training courses are conducted either through internal resources or by hiring reputable outside agencies. However, these organizations may lack the resources to present a totally well-rounded program such as is available at BCIT.

Any company or organization wishing to have credit granted to employees for "in-house" training should submit details to the appropriate continuing education department for approval before making a commitment to the employee. Applications should include course content, duration, qualifications of the instructor and any pertinent data. This need only be done once, unless there is a change. Courses for credit should be related to one or more BCIT Certificate Programs (see those within this calendar) and normally represent a transferable skill. For example: "Principles of Supervision" would be acceptable, whereas a course on com-

PART-TIME STUDIES

☐ PROGRAM APPROVAL AND
☐ TRANSFER CREDIT

DATE		
MO.	DAY	YR.

Student Number	Student Name			
Address (Number and Street)				
City/Town		Province	Country	Postal Code
Area Code	Home Telephone Number	Area Code	Business Telephone Number	Local

CERTIFICATE CLASSIFICATIONS:

- Business Certificate
- Senior Business Certificate
- Health Care Management Certificate — Level 1
- Health Care Management Certificate — Level 2
- Intermediate Certificate of Technology
- Certificate of Technology
- Special Certificate
- Diploma of Technology
- Advanced Diploma of Technology
- Other

Type of Certificate	Program Name

COURSE NUMBER	COURSE NAME	CREDITS	COURSE COMPLETED? YES	NO

- If transfer credit is requested, TRANSCRIPT(S) and COURSE OUTLINE(S) must be attached.

INSTITUTION	COURSE NAME	COURSE NUMBER	BCIT EQUIVALENT COURSE	OFFICE USE ONLY TECH. APPROVAL OF EQUIVALENCE

Student Signature	Date:

FOR OFFICE USE ONLY	Recorded by -- Signature	Date:
Total Transfer Credits Allowed:	Approved by -- Prog. Coord. Part-time Studies	Date:

PART-TIME STUDIES

☐ PROGRAM APPROVAL AND
☐ TRANSFER CREDIT

DATE		
MO.	DAY	YR.

Student Number	Student Name			
Address (Number and Street)				
City/Town		Province	Country	Postal Code
Area Code	Home Telephone Number	Area Code	Business Telephone Number	Local

CERTIFICATE CLASSIFICATIONS:

- Business Certificate
- Senior Business Certificate
- Health Care Management Certificate — Level 1
- Health Care Management Certificate — Level 2
- Intermediate Certificate of Technology
- Certificate of Technology
- Special Certificate
- Diploma of Technology
- Advanced Diploma of Technology
- Other

Type of Certificate	Program Name

COURSE NUMBER	COURSE NAME	CREDITS	COURSE COMPLETED? YES	NO

- If transfer credit is requested, TRANSCRIPT(S) and COURSE OUTLINE(S) must be attached.

INSTITUTION	COURSE NAME	COURSE NUMBER	BCIT EQUIVALENT COURSE	OFFICE USE ONLY TECH. APPROVAL OF EQUIVALENCE

Student Signature	Date:

FOR OFFICE USE ONLY	Recorded by -- Signature	Date:
Total Transfer Credits Allowed:	Approved by -- Prog. Coord. Part-time Studies	Date:

pany policy and procedures, or interpretation of the company labor agreement would not be acceptable. On-the-job training, skill or techniques unique to the company would also not be appropriate for recognition.

Requests for transfer credit may be submitted by individual employees to a Part-time Studies program advisor at any time after completion of BCIT course work. Such submissions should be supported by the employer's documentation of successful completion.

It is anticipated that this interest and encouragement to employees to develop and upgrade their qualifications will be rewarding to both employee and employer. Enquiries should be directed to the registration office.

CAREER SEARCH WORKSHOPS

These BCIT workshops of four sessions each are designed for adults who have been in the work force for at least two years, who wish to examine their career paths and lifestyles in terms of direction and satisfaction.

The workshops include standardized testing, exploration of career training opportunities, educational resource materials and discussion. Participants are encouraged to clarify their interests, values and abilities, specify goals and develop plans of action.

The workshops are limited to 15 participants. Contact the Student Services Office at 434-3304 for information.

CERTIFICATES AND DIPLOMAS

Certificate Program Approval

BCIT offers certificates through many of its technologies in Business, Engineering and Health Sciences. Although most programs are standard, students may amend these recommended programs to suit their career needs; it is often necessary and always advisable for students to apply for program approval. Program Approval forms are available from Student Records, Registration, Student Services and the Program Advisors for Part-time Studies. Program Approval forms, and all appropriate documentation should be submitted to the Program Advisor.

Program approval assures students that their academic efforts will result in the desired certification.

Program approval is required:

- when a student wishes to modify a certificate program outlined in the calendar
- when a student wishes to amend an approved program
- when a student requests a transfer credit
- for all Senior Certificates, Certificates of Technology and National Diplomas of Technology
- for all combined Engineering Technology and Business Certificates
- whenever challenge credit is requested
- when an elective is included in a program
- when alternative courses are included in a program.

A student must apply for program approval in a written submission detailing the proposed courses and programs. Forward submissions to Student Records or the appropriate Technology department, Engineering, Business or Health Sciences (as applicable). Please allow 4-6 weeks for processing.

Although BCIT has recently changed over from a system of **units** to the credit system, we are still in the process of reviewing our certificate and diploma requirements in terms of number of credits.

Program Advising

Part-time Studies programs are designed to enhance career aspirations. Program Advisors are available to assist students in course selection and program planning appropriate to their career needs. Students are advised to confer with a Program Advisor prior to entering a program of studies at BCIT. It is recommended that proposed programs be submitted to a Program Advisor for approval.

At the **Burnaby Campus**, Program Advisors for part-time studies are available throughout the year. For an appointment, or additional information, please call 434-3304.

At the **Downtown Education Centre**, assistance with Business Courses and Certificate Programs is available. For information call 687-4666.

Business, Engineering and Health Sciences Certificates and Diplomas

Outlines of technology certificate and diploma programs are located in the individual technology sections of the calendar.

Senior Business Certificate

After completing the basic Business Certificate, a student may earn a Senior Business Certificate by completing additional approved course credit.

The courses required for a Senior Certificate are published for some technologies. In technologies where no Senior Certificate program is published, the student must seek assistance from a program advisor. All Senior Certificate programs of studies must be approved in advance.

Certificate Programs – Engineering Technology

Engineering technology part-time programs in the new BCIT are based on the former BCIT part-time programs leading to the Engineering Technician Certificate and the Senior Engineering Technician Certificate. The new programs now lead to the award of the Certificate of Technology and the Intermediate Certificate of Technology.

* The Certificate of Technology is awarded for successful completion of an approved program of study of at least 75 credits;

Certificate of Technology programs are technician-level programs developed in response to the needs of students who cannot, or do not wish to, follow a technologist program. Most of these programs will not be exactly equivalent to Year 1 of corresponding BCIT full-time technology programs, but it will be possible for part-time students to ladder into a Diploma program on completion of appropriate courses and to progress to the Diploma full-time or, in certain technologies, part-time. This will help more part-time students progress to a Diploma of Technology.

* The Intermediate Certificate of Technology is awarded for successful completion of an approved program of study of at least 45 credits. This certificate will be awarded at the same point as the former Engineering Technician Certificate.

If you are presently enrolled in a BCIT Engineering Technician Certificate program, you will be awarded the Intermediate Certificate of Technology on successful completion of your program.

If you are presently enrolled in a Senior Engineering Technician Certificate program your academic standing may be reviewed to see if you have received 75 credits of appropriate courses. If you have, you will be awarded the Certificate of Technology. If not,

your program may be modified with a view to awarding the Certificate of Technology on completion.

If you have any questions about your existing program and the programs published in this calendar, please contact one of the Technology representatives listed in the Programs section.

Combined Business and Engineering Technology Certificates

BCIT will award combined Business and Engineering Certificates to students who successfully complete a program of study drawn from both departments. The object of these certificates is to provide a course of studies with a general business base and the flexibility to include engineering courses to suit the interest of each individual. Students must have a complete program approved in advance.

Application for Certificates

The responsibility for applying for a certificate lies with the student. Application should be made only when the student has completed the requirements indicated on their pre-approved Program. See section on Program Approval.

Applications are available at Registration and Student Records at the Burnaby Campus and Downtown Education Centre.

Diploma of Technology

After obtaining the Senior Certificate or Certificate of Technology, students may advance to an approved National Diploma. Students will be required to complete additional approved program work. However, the amount of course work a student is required to complete will vary, depending on previous academic course work completed. Students must confer with a program advisor and obtain program approval before beginning a diploma program.

Note:

a) course credits from a completed degree of diploma program cannot be transferred;

b) students with a national Diploma of Technology are not eligible for a Technicians certificate or a second Diploma of Technology in the same technological area.

DIRECTED STUDY/CORRESPONDENCE COURSES

The Institute offers career-oriented credit and non-credit correspondence courses. For further information contact the appropriate part-time studies departments, or Registration.

Some credit courses in engineering technology are available in correspondence format. Many are presently available specifically to meet the requirements of the Transportation Systems (Highways) Diploma program, several of these courses are acceptable for credit in other technology programs. Please refer to the Transportation Systems (Highways) program for course descriptions and more information.

A wide range of courses in Forest Technology is presently undergoing review and updating.

For further details of any engineering technology correspondence courses please contact: Shari Monsma, telephone:432-8784

For details of correspondence courses in Math, Physics and Chemistry contact: Academic Support, telephone:432-8458.

School of Engineering Technology 432-8521

MOTH courses — Transportation Systems Department, 432-8784

BRIDGE courses — Renewable Resources Department, 432-8270

School of Health Sciences 432-8376

School of Business 432-8581

Academic Support 432-8458

INDUSTRY SERVICES

Customized Programs, Consulting and Development Services

BCIT's School of Engineering Technology Part-time Studies staff will work with your company to help determine your training requirements and to design and present courses for your staff. The full resources of BCIT are available to provide a comprehensive range of training at the supervisory, senior or middle management levels.

All of the courses described in this calendar contain material which can be adapted for your company for presentation at the required level. With the rapid growth in the implementation of new technology, it is more important than ever that companies use local resources to train personnel.

If your company has a training project, or if you wish to draw on the resources of BCIT for support in any new venture, contact Part-time Studies to find out how we can help you.

Marv Woolley, Acting Director, Part-time Studies
Telephone: (604)432-8261

Computerized Maintenance Program

A series of three practical workshops for those who are directly responsible for equipment maintenance, in particular, maintenance managers, superintendents, foremen and planners. Enrollment is restricted to 10 per workshop to allow each participant to work alone on a computer terminal.

Hardware: IBM PCs or compatibles.

Software: COMAC Computerized Preventive Maintenance System.

Eric Morse, Program Head, Industry Services.
Telephone: (604)432-8638.

Important Dates 1988-89

Fall Term1988

August 15 (Monday)	Extended hours for registration begin
August 22 (Monday)	Recommended deadline for mail registrations for September courses
September 1 (Thursday)	Health Sciences Guided Learning courses begin
September 5 (Monday)	LABOR DAY
September 12 (Monday)	Business, Engineering Technology, Academic Support and Health Sciences courses begin
September 19 (Monday)	Trade courses begin
October 10 (Monday)	THANKSGIVING DAY
November 11 (Friday)	REMEMBRANCE DAY
November 28 (Monday)	Start of last week for most courses
December 1 (Thursday)	Recommended registration deadline for Health Sciences Guided Learning courses starting January 4, 1989
December 16 (Friday)	Recommended deadline for mail registrations — January '89 courses

Winter Term 1989

January 4 (Wednesday)	Health Sciences Guided Learning courses begin
January 9 (Monday)	Engineering, Business, Health Sciences and Academic Support courses begin
January 16 (Monday)	Business courses begin in Surrey
March 1 (Wednesday)	Recommended registration deadline for most Health Sciences courses starting April 5
March 24 (Friday)	GOOD FRIDAY
March 27 (Monday)	EASTER MONDAY
March 27 (Monday)	Start of last week for most courses

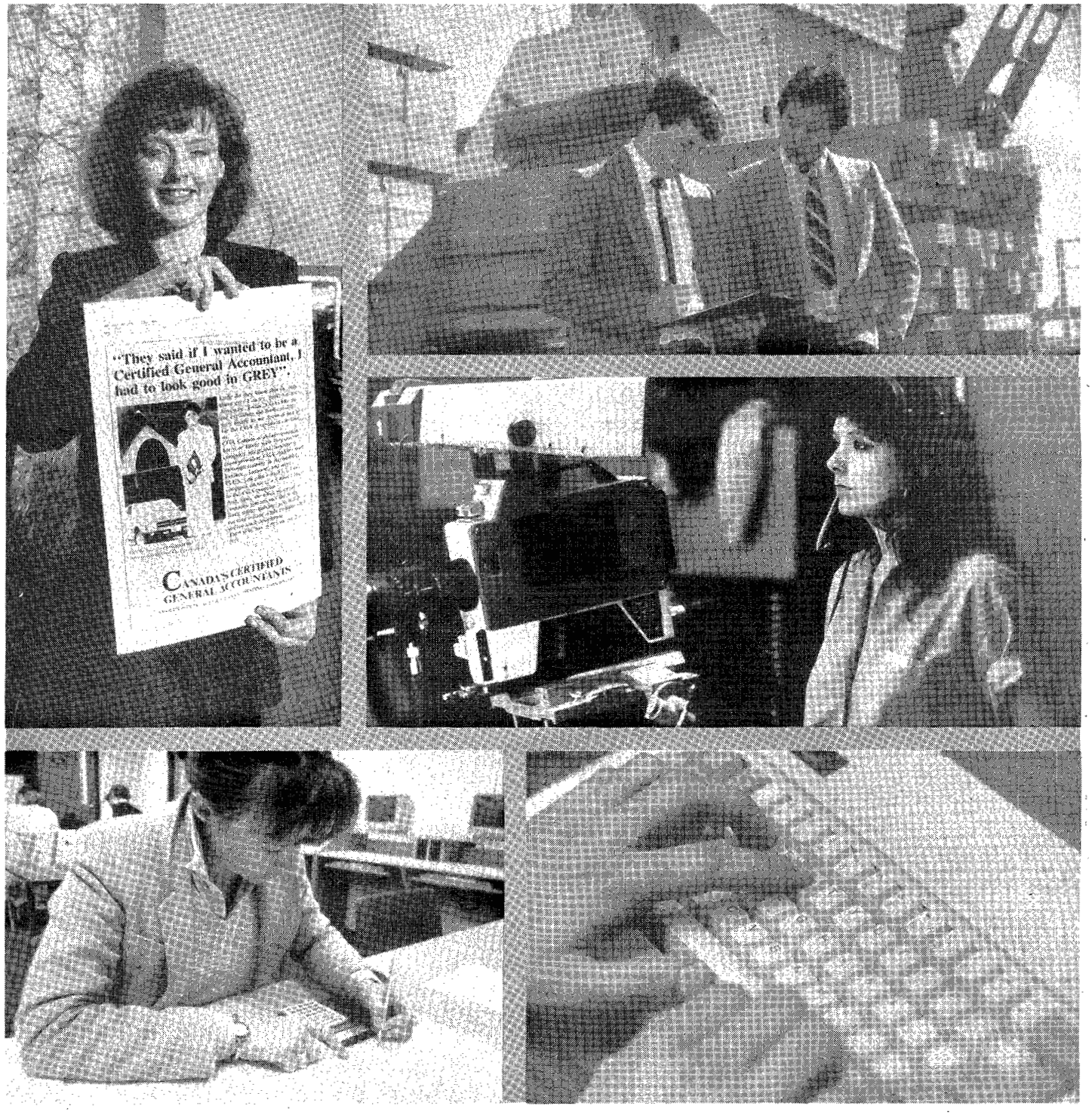
Spring Term 1989

April 3 (Monday)	Health Sciences Guided Learning courses begin
April 10 (Monday)	Engineering, Business, Health Sciences and Academic Support courses begin
April 17 (Monday)	Business courses begin in Surrey
May 22 (Monday)	VICTORIA DAY
June 26 (Monday)	Start of last week for most courses

Subject to confirmation at time of printing.

Notes

Notes


"They said if I wanted to be a Certified General Accountant, I had to look good in GREY".
CANADA'S CERTIFIED GENERAL ACCOUNTANTS

School of Business

Faculty and Staff

John Kyle, B.A., M.B.A., Ph.D., Dean
Lorne A. Fingarson, B.Comm., Director
Tom Manning, Program Head, Entrepreneurial Training Centre
Maureen Palfreyman, B.A., M.S.W., Ph.D. (A.B.D.), Program Head, Contract Training and Professional Development
K. Douglas Smith, B.A., M.B.A., Program Head, Part-time Studies and Seminar Centre
Regina Trineer, Administrator, Part-time Support Services

Business Part-time Studies

Certificate Programs

This Certificate Program section is made up of course groupings representing the suggested basic Certificate Programs within the School of Business. The basic certificate represents approximately 15 courses or 50 credits and can be easily attained in 3 - 5 years. The period is flexible and suggested programs can, in most cases, be amended to suit the individual career goals of the student.

Prior to embarking on a part-time studies Business Certificate Program it is advisable to consult a program advisor. All programs developed with a program advisor or revisions to existing programs must be approved by the appropriate department. Programs for Senior Certificates and Diplomas of Technology must be approved in advance.

Administrative Systems

Business Certificate in Administrative Management
Business Certificate in Personnel Management
Business Certificate in Public Administration
Business Certificate in Integrated Information Systems Management
Business Certificate in Operations Management
- Industrial Engineering Option
- Management Engineering Option
- Materials Management Option
- Transportation and Distribution Option

Broadcast Communications

Business Certificate in Broadcast Communications (with specializations in Radio, Television and Broadcast Journalism)
Business Certificate in Media Production

Financial Management

Business Certificate in Accounting
Business Certificate in Finance

Hospitality Administration

Business Certificate in Hospitality Management - Hotel Option
Business Certificate in Hospitality Management - Food and Beverage Option

Marketing and Tourism Management

Business Certificate in General Marketing
Business Certificate in Marketing Communications Options (with specialization in Advertising, Business Certificate in Sales Promotion or Public Relations)
Business Certificate in Professional Sales
Business Certificate in Tourism (with specialization in Travel and Tour Operations and Tourism Enterprise Development)

Specialized or Industry Based Programs

Business Certificate in Building Services Management
Business Certificate in Interior Design
Business Certificate in Flextime Hospitality; includes the Pacific Rim Institute of Tourism Certificate

Combined Business and Engineering Certificate Programs

Industrial Management
Technical Marketing

Employment Specific Certificates

Court Reporting Certificate
Legal Steno-Typist Certificate
Medical Office Assistant Certificate
Dental Office Coordinator Completion Certificate

Food and Hospitality Trades

Building Service Management Trades

Employment Specific Training

Vocational Instructor Training Completion Certificate
Security Officer Training Completion
Cashier Training Completion Certificate

Cooperative Association Programs and Certificates

Canadian Association for Production and Inventory Control (CAPIC)
Canadian Credit Union Institute Fellows' Program
Certified General Accountants Association of British Columbia
Institute of Chartered Accountants of British Columbia
Institute of Chartered Secretaries and Administrators
Municipal Administration Council of British Columbia
Purchasing Management Association of Canada
American Society for Quality Control Certification Program
Society of Management Accountants of British Columbia
Trust Companies Institute
Canadian Institute of Management
Canadian Administrative Housekeepers Association (C.A.H.A.)

Senior Certificate and National Diploma of Technology

The Senior Certificate and the National Diploma of Technology are available in most technologies. These programs must be individually approved and are developed to meet the dual needs of individual career aspirations and academic requirements. Specific approval is required for such programs and a Program Advisor should be consulted in every case.

ADMINISTRATIVE SYSTEMS TECHNOLOGY

Administrative Management
Personnel Management
Public Administration
Integrated Information Systems Management
Operations Management
- **Industrial Engineering**
- **Management Engineering**
- **Material Management**
- **Transportation/Distribution**

BUSINESS CERTIFICATE IN ADMINISTRATIVE MANAGEMENT

The number of courses required to obtain the Business Certificate in Administrative Management must generate a minimum of 50 credits.

The balance of credits should be selected from the list of electives and substitutes.

A. Complete the following:

		Credit
ADMN 110	Management 1	4.0
ADMN 211	Management 2	4.0
ADMN 222	Organizational Behavior 1	3.0
FMGT 109*	Accounting for the Manager	3.0

B. Complete at least 1 of the following:

ADMN 100	Microeconomics	4.0
ADMN 200	Macroeconomics	6.0
ADMN 406	Economic Issues for Financial Planners	3.0

C. Complete at least 4 of the following:

ADMN 204	Personnel Management	4.0
ADMN 324	Interpersonal Skills	3.0
ADMN 332	Labor Relations 1	4.0
ADMN 380	Business Law 1	3.0
ADMN 432	Labor Relations 2	6.0
ADMN 480	Business Law 2	6.0

D. Complete 1 of the following:

COMP 101	Data Processing Introduction	3.0
COMP 103	Data Processing Micro/Apple	3.0
COMP 105	Data Processing Micro/IBM PC	3.0

E. Balance of 50 credits to be electives.

Course selection should reflect the student's career objectives.

* Those considering CGA, RIA or other professional programs are referred to the Professional Agencies section of this catalog. This is especially true for courses in Group A where we suggest both FMGT 101 and 201 be taken in lieu of FMGT 109.

Students involved in, or considering, the Diploma Program must consult with the Program Head. This is especially important since day school requirements in the various areas often exceed certificate requirements (e.g. both ADMN 380 and 480 are required for day school law credit).

BUSINESS CERTIFICATE IN PERSONNEL MANAGEMENT

The number of courses required to obtain the Business Certificate in Personnel Management must generate a minimum of 50 credits.

The balance of courses should be selected from the list of electives and substitutions.

A. Complete the following:

		Credit
ADMN 110	Management 1	4.0
ADMN 204	Personnel Management	4.0
ADMN 211	Management 2	4.0
ADMN 222	Organizational Behavior 1	3.0
ADMN 322	Organizational Behavior 2	3.0
FMGT 109	Accounting for the Manager	3.0

B. Complete at least 1 of the following:

ADMN 100	Microeconomics	4.0
ADMN 200	Macroeconomics	6.0
ADMN 406	Economic Issues for Financial Planners	3.0

C. Complete at least 4 of the following:

ADMN 127	Training Techniques	3.0
ADMN 205	Selection Interviewing	4.0
ADMN 304	Manpower Planning	4.0
ADMN 305	Salary Administration	4.0
ADMN 324	Interpersonal Skills	3.0
ADMN 332	Labor Relations 1	3.0
ADMN 432	Labor Relations 2	6.0

D. Balance of 50 credits to be electives.

Course selection should reflect the student's career objectives.

Students involved in the Diploma Program must consult with the Program Head.

BUSINESS CERTIFICATE IN PUBLIC ADMINISTRATION

The number of courses required to obtain the Business Certificate in Public Administration must generate a minimum of 50 credits.

Balance of courses should be selected from the list of electives and substitutions.

A. Complete the following:

		Credit
ADMN 110	Management 1	4.0
ADMN 211	Management 2	4.0
ADMN 222	Organizational Behavior 1	3.0
ADMN 322	Organizational Behavior 2	3.0
FMGT 109	Accounting for the Manager	3.0

B. Complete 3 of the following:

ADMN 100	Microeconomics	4.0
ADMN 200	Macroeconomics	6.0
ADMN 332	Labor Relations 1	4.0
ADMN 406	Economic Issues for Financial Planners	3.0
FMGT 112	Finance for the Manager	3.0

C. Complete both of the following:

ADMN 170	Government and Business	3.0
ADMN 208	Municipal Law	3.0

D. Balance of 50 credits to be electives.

Course selection should reflect the student's career objectives.

Suggested Electives

Electives should be chosen to complement career goals. The following electives are suggested as a guide for a standard path of studies. Variations must be approved by a program consultant.

		Credit
ADMN 127	Training Techniques	3.0
ADMN 145	Managing Change	2.0
ADMN 150	Business Behavioral Research	3.0
ADMN 201	Counselling 1	3.0
ADMN 204	Personnel Management	4.0
ADMN 205	Selection Interviewing	4.0
ADMN 222	Organizational Behavior 1	3.0
ADMN 302	Problem Solving and Decision Making	3.0
ADMN 303	Counselling 3	3.0
ADMN 304	Manpower Planning	4.0
ADMN 322	Organizational Behavior 2	3.0
ADMN 324	Interpersonal Skills	3.0
ADMN 332	Labor Relations 1	4.0
ADMN 380	Business Law 1	3.0
ADMN 428	Management Simulations 1	4.0
ADMN 432	Labor Relations 2	6.0
ADMN 480	Business Law 2	6.0
COMP 101	Data Processing Introduction or	3.0
COMP 103	Data Processing Micro/Apple or	3.0
COMP 104	Computers in Business	3.0
COMP 105	Data Processing Micro/IBM PC	3.0
MKTG 101	Marketing 1	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
MKTG 324	Small Business Development	3.0
OHCE 101	Accident Prevention 1	3.0
OHCE 201	Industrial Health & Safety 1: Legislation	3.0
OPMT 102	Basic Mathematics of Finance	3.0
OPMT 197	Statistics for Business and Industry	4.5

THE INTEGRATED INFORMATION SYSTEMS MANAGEMENT PROGRAM

This program is designed for students who desire to expand their competence to work effectively in the contemporary automated office environment, and to enhance their career potentials.

The number of courses required to obtain the Business Certificate in Integrated Information Systems Management must generate a minimum of 50 credits.

Select either A or B below, and then continue with a selection of courses from C to E, to make up the required 50 credits.

A. Complete the following (or select B):

		Credit
ADMN 131	Introduction to Office Systems	1.5
ADMN 132	Introduction to Telecommunications	2.0
ADMN 235	Managing the Integrated Office	6.0

B. Complete the following (or select A):

ADMN 135	Automated Office Systems Management	3.0
*ADMN 213	*Canadian Business - 18 Sessions	6.0

* Substitutions: ADMN 212 Management, or ADMN 110 and 211 Management 1 and 2, may be substituted for ADMN 213.

C. Complete the following:

ADMN 240	Voice Communications Systems 1	3.0
ADMN 245	Designing the Integrated Office	3.0
ADMN 133	Integrated Software - Enable	3.0
FMGT 109	Accounting for the Manager	3.0
MKTG 102	Introduction to Marketing	3.0
OPMT 102	Basic Mathematics of Finance	3.0

D. Complete at least 5 of the following:

		Credit
ADMN 101	Economic Issues	4.0
ADMN 129	Records Management	3.0
ADMN 194	Multimate Word Processing	3.0
ADMN 195	Word Perfect Word Processing	3.0
ADMN 196	Word Processing Wang	3.0
ADMN 197	M.S. Word	3.0
ADMN 204	Personnel Management 1	4.0
ADMN 241	Business Data Communications 1	3.0
ADMN 332	Labor Relations 1	4.0
ADMN 380	Business Law 1	3.0

Faculty and Staff

B.R.M. Morrow, B.Comm.,Associate Dean
Telephone: 434-5734, Local 5229
T. Juzkow, Program Head, Business Administration
Telephone: 434-5734, Local 5222
B. Vanderwoerd, Program Head, Personnel/Industrial Relations
Telephone: 434-5734, Local 5416
L. Johnson, Program Head, Systems
Telephone: 434-5734, Local 5222

Part-time Studies

L. Jones, Coordinator
Telephone: 434-5734, Local 5433

OPERATIONS MANAGEMENT PROGRAMS

Operations Management puts you in the position to help business meet its productivity improvement goals while enhancing your quality of work life. Operations Management offers several options each oriented to specific operating sectors - each bringing its own rewards and advancements.

This program will assist entrepreneurs, divisional managers, line supervisors as well as first level employees, to attain both their personal and corporate goals. The program is very results oriented in that course content can be used for productivity improvement at the student's place of employment.

The options include:

1. Industrial Engineering
2. Management Engineering
3. Materials Management
4. Transportation and Distribution

BUSINESS CERTIFICATE IN OPERATIONS MANAGEMENT: INDUSTRIAL ENGINEERING

This program is designed for people who work, or wish to work, in the manufacturing and/or warehousing functions of an organization. It is suited to those who are or will be production forepersons, analysts or supervisors in such areas as inventory control, product cost estimating, standard setting, production planning and control, project administration and technical sales.

BUSINESS CERTIFICATE IN OPERATIONS MANAGEMENT: MANAGEMENT ENGINEERING

This program is designed for people who work in the private and public sectors of service industries - health care, education, justice services. Special attention is paid to ways in which management engineering tools may be applied to organizations whose results are not quantifiable.

BUSINESS CERTIFICATE IN OPERATIONS MANAGEMENT: MATERIALS MANAGEMENT

This program provides working adults with the training and education necessary to pursue a career in materials management.

The program is of interest to anyone involved in production and inventory control, buying, or related professions. Others benefitting from this program include: production and inventory control professionals who want to increase their knowledge of the field; newcomers to the profession who want to acquire a solid foundation on which to build a career and those choosing careers in such areas as purchasing, accounting, production supervision, traffic or warehousing.

This certificate uses the Canadian Association for Production and Inventory Control PIM courses.

BUSINESS CERTIFICATE IN OPERATIONS MANAGEMENT: TRANSPORTATION AND DISTRIBUTION

This program is designed for those engaged in both the buying and selling of transportation and distribution of goods.

OPMT 198 Productivity Engineering 1 is the core course for all options. It is a basic course in productivity improvement utilizing proven industrial engineering techniques.

Industrial Engineering Option

		Credit
ADMN 124	Supervisory Skills	3.0
COMM 183	Report Writing	3.0
FMGT 109	Accounting for the Manager	3.0
OPMT 102	Basic Mathematics of Finance	3.0
OPMT 163	Engineering Economics	3.0
OPMT 187	Project Planning and Scheduling	3.0
OPMT 188	Management Information Systems	3.0
OPMT 191	Purchasing	3.0
OPMT 192	Inventory Planning and Control	3.0
OPMT 103	Quality Control Methods 1	3.0
OPMT 106	Quality Assurance 1	3.0
OPMT 198	Productivity Engineering 1	3.0
OPMT 290	Work Analysis and Design	3.0
OPMT 292	Facilities Design Layout and Materials Planning	3.0
OPMT 298	Productivity Engineering 2	

Management Engineering Option

ADMN 124	Supervisory Skills	3.0
ADMN 145	Managing Change	2.0
ADMN 170	Government and Business	3.0
ADMN 222	Organizational Behavior 1	3.0
COMP 105	Introduction to Data Processing/Micro IBM PC	3.0
COMM 183	Report Writing	3.0
FMGT 109	Accounting for the Manager	3.0
OPMT 102	Basic Mathematics of Finance	3.0
OPMT 106	Quality Assurance 1	3.0
OPMT 187	Project Planning and Scheduling	3.0
OPMT 188	Management Information Systems	3.0
OPMT 191	Purchasing	3.0
OPMT 198	Productivity Engineering 1	3.0
OPMT 290	Performance Measurement	3.0
OPMT 298	Productivity Engineering 2	

Materials Management Option

ADMN 124	Supervisory Skills	3.0
COMM 183	Report Writing	3.0
COMP 105	Introduction to Data Processing/Micro IBM PC	3.0
CPIC 100	CAPIC Planning	3.0
CPIC 200	CAPIC Inventory Management	3.0
CPIC 300	CAPIC Material Requirements Planning	4.0
CPIC 400	CAPIC Capacity and Priority Planning	4.0
CPIC 500	CAPIC Production Activity Control	1.5
CPIC 600	CAPIC Just-In-Time Production	1.5
OPMT 106	Quality Assurance 1	3.0
OPMT 175	Warehouse Management	3.0
OPMT 191	Purchasing	3.0
OPMT 198	Productivity Engineering 1	3.0
OPMT 293	Facility Layout and Material Handling - Office	3.0
OPMT 298	Productivity Engineering 2	3.0
TDMT 409	Exporting and Importing	4.5
TDMT 413	Traffic and Transportation Management	4.5

Transportation and Distribution Option

ADMN 124	Supervisory Skills	3.0
COMP 101	Data Processing - Introduction or	3.0
COMP 103	Introduction to Data Processing Micro/Apple or	3.0
COMP 105	Introduction to Data Processing Micro/IBM PC	3.0
OPMT 191	Purchasing	3.0
OPMT 192	Inventory Planning and Control	3.0
OPMT 198	Productivity Engineering 1	3.0
OPMT 298	Productivity Engineering 2	3.0
TDMT 101	Geography of Trading 1	2.0
TDMT 201	Geography of Trading 2	2.5
TDMT 202	Transportation Regulations	5.0
TDMT 203	Transportation Economics	5.0
TDMT 305	International Trade	4.0
TDMT 409	Exporting and Importing	4.5
TDMT 410	Strategic Distribution Management	6.0
TDMT 412	Principles of Logistics	3.0
TDMT 413	Traffic and Transportation Management	4.5
	Electives	4.5

Faculty and Staff

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G. Murray, Program Head, Operations Management
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H. Pevecz, Program Head, Transportation and Distribution
Telephone: 434-5734, Local 5849.

B. Curtis, Part-time Studies Coordinator
Telephone: 432-8850

BROADCAST COMMUNICATIONS TECHNOLOGY

Radio
Television
Broadcast Journalism
Media Production

Prospective applicants are advised to attend a counselling session prior to enrolling in any Broadcast Communications part-time course. These sessions are held at 1730 in Room 1A-129 (just off the main lobby) on the following days: the last Monday in August, and the first Monday of every month thereafter through June. (Where a first Monday is a Statutory Holiday, the seminar will be held on the second Monday.) Confirmation of dates can be obtained by contacting 432-8863.

The following courses are available through part-time offerings from the Broadcast Communications Department. These courses are normally twelve weeks in length, running one night per week, three hours per night.

First Level Courses

		Credit
BCST 101	Technical Introduction	3.0
BCST 140	Broadcast Industry Organization	3.0
BCST 141	Broadcast Sales and Management	3.0
BCST 142	The History and Development of Contemporary Music	3.0
BCST 143	The Music Business and the Broadcast Industry	3.0
BCST 144	Writing for the Media	3.0
BCST 145	Copywriting for Radio and TV	3.0
BCST 146	Broadcast Advertising and Promotion	3.0
BCST 148	Interviewing for Radio and Television	3.0
BCST 149	Film Reviewing	3.0
BCST 150	Radio Broadcasting Introduction	3.0
BCST 151	Radio and TV Announcing	3.0
BCST 160	Television Broadcasting Introduction	3.0
BCST 161	Film for Beginners	3.0
BCST 162	Dramatic Writing for Film and TV	3.0
BCST 163	Acting for Television	3.0
BCST 164	Scenery Construction for Film and Television	3.0
BCST 165	Film and Tape Techniques and Procedures	3.0
BCST 167	Production Assisting for Television	3.0
BCST 168	The Role of the Line Producer	3.0
BCST 169	Feature Film Analysis	3.0
BCST 170	Broadcast Journalism Introduction	3.0
BCST 171	Broadcast News Writing	3.0
BCST 172	Investigative Reporting	3.0
BCST 173	Sportscasting	3.0
BCST 174	Broadcast Newsroom Operations	3.0
BCST 175	Introduction to Current Affairs	3.0
BCST 188	Props for Film and Television	3.0
BCST 189	Music Scoring for Film	3.0

Second Level Courses (requiring one or more prerequisites)

BCST 222	Theory of Color Television System	3.0
BCST 223	Television Production Planning	3.0
BCST 252	Radio Commercial and Audio Production	3.0
BCST 253	Radio Operations Lab	3.0
BCST 260	Television Production Techniques	3.0
BCST 262	Writing Scripts that Sell	3.0
BCST 263	Television Technical Production	3.0

BUSINESS CERTIFICATE IN BROADCAST COMMUNICATIONS

The courses required to obtain the Business Certificate in Broadcast Communications, and additional courses from either Broadcast or other business programs are listed below.

Students intending to pursue a Certificate in Broadcast Communications should choose a specific program (Radio, Television or Broadcast Journalism). Each Program requires 8 specific Broadcast Communications courses, 2 elective Broadcast Communications courses, and 7 additional business courses selected from 11 offerings.

Program and course selection should only be done with the guidance and advice of a program advisor. The program must be reviewed and approved by the Broadcast Communications Associate Dean and Part-time Studies Coordinator.

Radio

		Credit
BCST 101	Technical Introduction	2.0
BCST 140	Broadcast Industry Organization	3.0
BCST 145	Copywriting for Radio and TV	3.0
BCST 150	Radio Broadcasting Introduction	3.0
BCST 151	Radio Announcing	3.0
BCST 170	Broadcast Journalism Introduction	3.0
BCST 252	Radio Commercial and Audio Production	3.0
BCST 253	Radio Operations Lab BCST	
	*** Electives	

Television

BCST 101	Technical Introduction	2.0
BCST 140	Broadcast Industry Organization	3.0
BCST 145	Copywriting for Radio and TV	3.0
BCST 160	Television Broadcasting Introduction	3.0
BCST 170	Broadcast Journalism Introduction	3.0
BCST 222	Theory of Color Television Systems	3.0
BCST 223	Television Production Planning	3.0
BCST 260	Television Production Techniques	3.0
BCST	***Electives	

Broadcast Journalism

BCST 144	Writing for the Media	3.0
BCST 150	Radio Broadcasting Introduction	3.0
BCST 151	Radio and TV Announcing	3.0
BCST 160	Television Broadcasting Introduction	3.0
BCST 170	Broadcast Journalism Introduction	3.0
BCST 171	Broadcast News Writing	3.0
BCST 172	Investigative Reporting	3.0
BCST 174	Broadcast Newsroom Operations	3.0
BCST	***Electives	

Broadcast (BCST) electives may be chosen from the list of First and Second level Broadcast Communications courses.

Business electives may be chosen from the following list:

		Credit
ADMN 110	Management 1	4.5
ADMN 181	Word Processing	1.5
ADMN 200	Macroeconomics	6.0
ADMN 211	Management 2	4.0
ADMN 222	Organizational Behavior	3.0
ADMN 380	Business Law	3.0
COMM 160	Business and Technical Communication	3.0
COMM 171	Business Reports	3.0
COMP 101	Data Processing	3.0
MKTG 101	Marketing 1	3.0
OPMT 197	Statistics for Business and Industry	4.5

Entry into the Second Year Day School Program

Students who wish to enter the second year of the full-time day school program may qualify to do so by successfully completing the Broadcast Communications Certificate program and by subsequently attending an "intersessional" - an intensive full-time practical program operated 4 days a week for 4 weeks, commencing in the middle of April every year, operated in conjunction with the day school "first year practicum" session.

Students meeting these requirements may then be able to enter the second year program if positions are available and a selection committee deems them qualified for entry based upon normal selection procedures and guidelines.

Approval for day school second year entry must be obtained from the Associate Dean of Broadcast Communications. An interview will be required. It is recommended that certificate program students intending to enter a second year program upon completion of their certificate, should contact the Associate Dean for an interview early in their program of studies. This interview will determine initial suitability for second year entry.

CERTIFICATE PROGRAM IN MEDIA PRODUCTION

The program provides a dynamic mix of production oriented training courses designed to equip the student with a variety of skills and techniques currently used in the corporate, industrial, educational, marketing and communications fields. The early courses provide job readiness skills immediately applicable to careers in a variety of fields. The full Certificate level combines the basic skills developed in early courses with broad entrepreneurial and management skills useful to individuals who intend to establish their own businesses or those in a larger organization who want to expand their career opportunities.

A prerequisite course, MDIA 099 Introductory Photography, is required for the Photography courses unless a person has had experience in the photography field.

Basic courses required include:		**Credit**
MDIA 101	Photography	3.0
MDIA 201	Advanced Photography	3.0
MDIA 102	Audio Production	3.0
MDIA 103	Slide Tape Production	3.0
MDIA 104	Graphics Level 1	3.0
MDIA 204	Graphics Level 2	3.0
MDIA 205	Media Selection and Utilization	3.0
MDIA 206	Effective Presentation Techniques	3.0
MDIA 207	Corporate Script Writing	3.0

Optional courses to complete the full Certificate must include six of the following courses unless specific approval for alternative course is obtained from a Program Advisor, the course coordinator or the Associate Dean.

		Credit
ADMN 124	Supervisory Skills	3.0
BCST 101	Technical Introduction	3.0
BCST 160	Introduction to Television	3.0
FMGT 109	Accounting for the Manager	3.0
MDIA 301	Commercial Photography	3.0
MKTG 218	Introduction to Media	3.0
MKTG 322	Advertising 1	3.0
MKTG 324	Small Business Development	3.0

Faculty and Staff

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FINANCIAL MANAGEMENT TECHNOLOGY

Accounting
Finance

BUSINESS CERTIFICATE IN ACCOUNTING

This program establishes a firm grounding in financial management with an emphasis on the generation and understanding of financial reports. There is ample opportunity for specialization to suit individual needs and preferences. The courses required to obtain the Business Certificate in Accounting are as follows.

First Level Courses		**Credit**
ADMN 100	Microeconomics	4.0
ADMN 110	Management 1	4.0
ADMN 200	Macroeconomics	6.0
ADMN 211	Management 2	4.0
COMP 101	Data Processing Introduction or	3.0
COMP 103	Data Processing Intro Micro/Apple or	3.0
COMP 105	Data Processing Intro Micro/IBM PC	3.0
FMGT 101	Accounting 1	4.0
FMGT 201	Accounting 2	6.0

Second Level Courses

FMGT 301/ FMGT 401	Cost and Managerial Accounting 1 and 2 or	10.0
FMGT 302/ FMGT 402	Financial Accounting 1 and 2	10.0
FMGT 316	Taxation 1	3.0
FMGT 408	Taxation 2	3.0
	Electives	

BUSINESS CERTIFICATE IN FINANCE

A program designed for those working or aspiring to work in the financial administration area of a firm. The program is also appropriate for those who have progressed to a position in an organization where they must add financial skills to their repertoires. The courses required at each level to obtain the Business Certificate in Finance are as follows. The balance of courses may be selected from the list of electives.

First Level Courses		**Credit**
ADMN 100	Microeconomics	4.0
ADMN 110	Management 1	4.0
ADMN 200	Macroeconomics	6.0
COMP 101	Data Processing Introduction or	3.0
COMP 103	Data Processing Micro/Apple or	3.0
COMP 105	Data Processing Micro/IBM PC	3.0
FMGT 101	Accounting 1	4.0
FMGT 106	Credit and Collections	4.0
FMGT 201	Accounting 2	6.0

Second Level Courses **Credit**

FMGT 302	Financial Accounting 1	4.0
FMGT 402	Financial Accounting 2	10.0
FMGT 307	Finance 1	4.0
FMGT 315	Security Analysis 1	4.0
FMGT 404	Finance 2	6.0
OPMT 132	Statistics for Financial Management	7.0
	Electives	

Suggested Electives

Electives should be chosen to complement career goals. The following electives are suggested as a guide for a standard path of studies. Variations must be approved by a program advisor.

		Credit
ADMN 145	Managing Change	2.0
ADMN 302	Problem Solving and Decision Making	3.0
ADMN 305	Salary Administration	4.0
ADMN 322	Organizational Behavior 2	3.0
ADMN 332	Labor Relations 1	4.0
ADMN 380	Business Law 1	4.0
ADMN 428	Management Simulations 1	4.0
ADMN 432	Labor Relations 2	6.0
ADMN 480	Business Law 2	6.0
COMM 160	Business and Technical Communication	3.0
COMP 104	Computers in Business	3.0
COMP 160	Computer Systems Introduction 1	4.0
FMGT 301	Cost and Managerial Accounting 1	4.0
FMGT 302	Financial Accounting 1	4.0
FMGT 307	Finance 1	4.0
FMGT 308	Security Analysis 1	4.0
FMGT 310	Auditing 1	4.0
FMGT 316	Taxation 1	3.0
FMGT 401	Cost and Managerial Accounting 2	6.0
FMGT 402	Financial Accounting 2	6.0
FMGT 404	Finance 2	6.0
FMGT 406	Auditing 2	6.0
FMGT 408	Taxation 2	3.0
MKTG 102	Introduction to Marketing	3.0
MKTG 301	Marketing Planning	4.5
MKTG 309	Marketing Research 1	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
MKTG 324	Small Business Development	3.0
MKTG 424	Advertising for the Small Firm	3.0
OPMT 102	Basic Mathematics of Finance	3.0
OPMT 132	Statistics for Financial Management	7.0
OPMT 188	Management Information Systems	3.0
TDMT 409	Exporting and Importing	4.5

Faculty and Staff

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HOSPITALITY ADMINISTRATION TECHNOLOGY

Hotel
Food and Beverage

BUSINESS CERTIFICATE IN HOSPITALITY MANAGEMENT – HOTEL OPTION

The program is designed to give students a solid understanding of the Hotel, Motel and Accommodations industry. Courses will provide entry level skills leading to employment as hotel reception clerks, front office supervisors, marketing and sales representatives, housekeeping department supervisors as well as food and beverage positions. The courses required at each level to obtain the Business Certificate in the Hospitality and Tourism certificate are as follows. The balance of courses may be selected from the list of electives.

First Level Courses **Credit**

HOSP 112	Customer Relations and Communications	3.0
HOSP 132	Career Exploration for Hospitality	1.5
HOSP 205	Front Office Procedures	3.0
HOSP 207	Front Office Equipment Practicum	1.5
HOSP 209	Orientation and Techniques for the Executive Housekeeper	3.0

Second Level Courses

COMP 101	Data Processing Introduction	3.0
FMGT 101	Accounting 1	4.0
HOSP 306	Bar Management: Lounges and Pubs	3.0
HOSP 313	Food and Beverage Control	5.0
HOSP 357	Marketing and Sales: Accommodation and Food Service	3.0
HOSP 412	Hospitality Management Accounting	3.0
	Electives	

BUSINESS CERTIFICATE IN HOSPITALITY MANAGEMENT - FOOD AND BEVERAGE OPTION

This option is designed to give students a broad understanding of the food and beverage industry. Career opportunities exist as food and beverage managers, catering supervisors, food production supervisors, sales representatives, bartenders and food service personnel. Many courses will appeal to those planning to open their own restaurants. The courses required at each level to obtain the Business Certificate in Hospitality and Tourism are as follows. The balance of courses may be selected from the list of electives.

First Level Courses **Credit**

HOSP 112	Customer Relations and Communications	3.0
HOSP 132	Career Exploration for Hospitality	1.5
HOSP 203	Introduction to Food and Beverage Management	3.0
HOSP 204	Introduction to Bartending	1.5
HOSP 255	How to Start Your Own Restaurant	3.0

Second Level Courses

COMP 101	Data Processing Introduction	3.0
FMGT 101	Accounting 1	4.0
HOSP 306	Bar Management: Lounges and Pubs	3.0
HOSP 307	Understanding Wines 1	3.0
HOSP 313	Food and Beverage Control	5.0

		Credit
HOSP 357	Marketing and Sales: Accommodation and Food Service	3.0
HOSP 358	Analyzing Costs and Planning for Restaurants	3.0
HOSP 412	Hospitality Management Accounting	3.0
	Electives	

Suggested Electives

Electives should be chosen to complement career goals. The following electives are suggested as a guide for a standard path of studies. Variations must be approved by a program advisor.

		Credit
ADMN 110	Management 1	4.5
ADMN 211	Management 2	4.0
ADMN 222	Organizational Behavior 1	3.0
ADMN 322	Organizational Behavior 2	3.0
COMM 171	Business Reports	3.0
COMP 104	Computers in Business	3.0
FMGT 201	Accounting 2	6.0
HOSP 209	Orientation and Techniques for the Executive Housekeeper	3.0
HOSP 317	Understanding Wines 2	1.5
HOSP 414	Financial Management: Hospitality	3.0
MKTG 101	Marketing 1	3.0
MKTG 306	Principles of Small Business Management	5.0
MKTG 323	Public Speaking and Oral Communication 1	3.0

Faculty and Staff

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MARKETING AND TOURISM MANAGEMENT TECHNOLOGY

General Marketing
Marketing Communications
Professional Sales
Tourism

GENERAL MARKETING OPTION

For those who work in the retail, wholesale, manufacturing and service industry, this program offers a diverse assortment of courses designed to provide you with an understanding of all elements of Marketing Management. Studies will include planning, scheduling, and control techniques,research and demand development,and sales operations.the courses required to obtain your certificate are listed below. The balance of courses may be selected from the list of suggested electives.

Two Term Courses

		Credit
MKTG 101	Marketing 1	3.0
MKTG 201	Marketing 2	3.0
MKTG 209*	Marketing Research 1	3.0
MKTG 401*	Marketing Planning	3.0
MKTG 409	Marketing Research 2	3.0
MKTG 501*	Strategic Marketing Management	3.0

One Term Courses

ADMN 110	Management 1	3.0
COMM 171	Business Reports	3.0
FMGT 109	Accounting for the Manager	3.0
MKTG 205*	Marketing of Services	3.0
MKTG 219	Professional Sales 1	3.0
MKTG 322	Advertising 1	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
	Electives (2)	6.0

* Marketing 101, 201 or related industry experience may be prerequisites for these courses.

MARKETING COMMUNICATIONS OPTION

(with Specializations in Advertising, Sales Promotion or Public Relations)

This program is designed to give you specialized training in specific design and

campaign development requirements. Included in this broad yet detailed spectrum are the development of advertising objectives, selection of appropriate message design and media, establishment of campaign timing and expenditure, and analysis of budgeting control. Listed below are the courses required to obtain your certificate. The balance of courses may be selected from the suggested electives.

Two Term Courses

		Credit
MKTG 101	Marketing 1	3.0
MKTG 201	Marketing 2	3.0
MKTG 309*	Marketing Research 1	3.0
MKTG 322	Advertising 1	3.0
MKTG 409	Marketing Research 2	3.0
MKTG 422	**Advertising 2	3.0
	or approved electives	

One Term Courses

ADMN 110	Management 1	3.0
FMGT 109	Accounting for the Manager	3.0
MKTG 218	Introduction to Media	3.0
MKTG 219	Professional Sales 1	3.0
MKTG 321	Public Relations	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0

* Marketing 201 is a prerequisite for this course.

** Marketing 322 or industry experience is a prerequisite

Specialized Courses

Advertising

		Credit
BCST 145	Copywriting for Radio and TV	3.0
MKTG 427	Creative Advertising Design	3.0
	Elective	3.0

Sales Promotion

MKTG 433	Sales Promotion	1.5
MKTG 437	Principles of Direct Marketing	1.5
	Elective	3.0

Public Relations **Credit**

MKTG 433	Advanced Public Relations	3.0
MKTG 423	Public Speaking and Oral Communication 2	3.0
	Elective	

PROFESSIONAL SALES OPTION

Enhance your ability to sell products/services to consumers, the commercial market and professional buyers. Analyze buyer needs, plan detailed and exciting presentations and utilize professional oral and written skills. Courses required to obtain your certificate are listed below. The balance of courses may be selected from the suggested electives.

Two Term Courses **Credit**

MKTG 101	Marketing 1	3.0
MKTG 201	Marketing 2	3.0
MKTG 219	Professional Sales 1	3.0
MKTG 309	*Marketing Research 1	3.0
MKTG 319	**Professional Sales 2	3.0
MKTG 409	Marketing Research 2	3.0
	or approved elective	

One Term Courses

ADMN 110	Management 1	3.0
COMM 171	Business Reports	3.0
FMGT 109	Accounting for the Manager	3.0
MKTG 203	Sales Management	3.0
MKTG 302*	Industrial Marketing	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
MKTG 401*	Marketing Planning	3.0
MKTG 437	Principles of Direct Marketing	1.5
	Elective	3.0

* Marketing 201 is a prerequisite for these courses

** Marketing 219 or industry experience is a prerequisite

BUSINESS CERTIFICATE IN TOURISM

(With specialization in Travel and Tour Operation and Tourism Marketing or Tourism Enterprise Development.)

The growing industry of tourism demands highly educated individuals who are able to adapt to rapidly changing conditions. BCIT will provide you with the most current skills and information required for the tourism technology. You will have the opportunity to learn tourism, marketing, travel and tour operations, and international tourism. The courses required to obtain your certificate are listed below. Additional courses may be chosen from the list of suggested electives.

Core Courses **Credit**

ADMN 110	Management 1	3.0
COMP 101	Data Processing Introduction	3.0
FMGT 109	Accounting for the Manager	3.0
HOSP 112	Customer Relations and Communication Skills	3.0
MKTG 101	Marketing 1	3.0
MKTG 219	Professional Sales 1	3.0
TOUR 230	Tourism Introduction	3.0
TOUR 260	Issues in Tourism	3.0
TOUR 240	Tourism Geography	3.0
TOUR 250	Travel Agency and Tour Operation: An Introduction	3.0
TOUR 251	Tour Managing, Escorting and Guiding	3.0
TOUR 350	Domestic Air	3.0
TOUR 351	International Air	3.0

Specialization Courses

Travel and Tourism **Credit**

TOUR 353	Automated Reservations	3.0

One course from List A — One course from List B

List A

TOUR 212	Basic Communication in Japanese	3.0
TOUR 213	Basic Communication in French	3.0
TOUR 214	Basic Communication in Spanish	3.0

List B

TOUR 241	Tourism: Europe	1.5
TOUR 243	Tourism: Pacific Rim	1.5
TOUR 244	Tourism: South Pacific	1.5

Tourism Marketing

MKTG 309	Marketing Research 1	3.0
MKTG 401	Marketing Planning	3.0
MKTG 409	Marketing Research 2	3.0

Tourism Enterprise Development

MKTG 118	Sales Promotion	1.5
MKTG 324	Small Business Development	3.0
MKTG 437	Principles of Direct Marketing	1.5

Suggested Electives

BCIT has a choice of electives to enhance your chosen program. Courses may be selected from other marketing certificate programs or from the following list.

		Credit
ADMN 211	Management 2	3.0
ADMN 222	Organizational Behavior 1	3.0
COMP 103	Data Processing Micro/Apple	3.0
COMP 105	Data Processing Micro/IBM PC	3.0
MKTG 407	Marketing Strategies for the Fashion Industry	1.5
MKTG 304	Marketing Strategies for High Technology	1.5
MKTG 318	Media Planning and Buying	3.0
MKTG 320	Merchandising / Retailing	3.0
MKTG 324	Small Business Development	3.0
MKTG 325	Importing	3.0
MKTG 327	Exporting	1.5
MKTG 328	Principles of Property Management	3.0
MKTG 418	Directed Studies	3.0

Faculty and Staff

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J. Hicks, Program Head, Technical sales
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M. Shacker, Part-Time Studies Coordinator.
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CAPIC PRODUCTION AND INVENTORY MANAGEMENT PROGRAM

BCIT, in cooperation with CAPIC (Canadian Association for Production and Inventory Management) offers a series of courses in the production and inventory management field. This practical "how-to" program was developed specifically to serve both supervisory and non-supervisory P & IM practitioners as well as students preparing themselves for a career in the P & IM field. In keeping with the needs of the population it serves, this program teaches the most practical topics in depth, and includes case studies and exams which test integration of the concepts applied to real life situations. Topics will be presented in seven courses.

CPIC 050	Principles of Inventory Control
CPIC 100	Master Planning
CPIC 200	Inventory Management
CPIC 300	Materials Requirements Planning
CPIC 400	Capacity Management
CPIC 500	Production Activity Control
CPIC 600	Just-In-Time Production

These courses provide the basis for the Business Certificate in Operations Management - Materials Management and in addition, are excellent preparation for the American Production and Inventory Control Society (APICS) certification exams.

Students wishing to take an introductory level course that covers the entire production and inventory management field, should take CPIC 050 Principles of Inventory Control.

More information on CAPIC is contained in the section Professional Agencies of Interest to Part-time students.

SPECIALIZED BUSINESS CERTIFICATES

Building Services Management
Interior Design
Flextime Hospitality

BUSINESS CERTIFICATE IN BUILDING SERVICES MANAGEMENT

BCIT, in co-operation with the Canadian Building Services Association of British Columbia, is pleased to present the following certificate program.

First Level Courses

		Credit
ADMN 110	Management 1	4.5
ADMN 211	Management 2	4.0
ADMN 124	Supervisory Skills	3.0
BSMT 100	Maintenance and Control	3.0
BSMT 101	Safety and Sanitation	3.0

Second Level Courses

ADMN 222	Organizational Behavior 1	3.0
ADMN 332	Labor Relations 1	4.0
FMGT 109	Accounting for the Manager	3.0
OPMT 191	Purchasing	3.0
	Electives	

Suggested Electives

Electives should be chosen to complement career goals. The following electives are suggested as a guide for a standard path of studies. Variations from the School of Business courses are allowed if prior approval is obtained from a program advisor.

		Credit
ADMN 100	Microeconomics	4.0
ADMN 127	Training Techniques	3.0
ADMN 128	Occupational Safety and Health	3.0
ADMN 141	Business Computer Fluency/Apple 2 Word Processing	2.0
ADMN 145	Managing Change	2.0
ADMN 201	Counselling 1	3.0
ADMN 205	Selection Interviewing	4.0
COMP 103	Data Processing Intro Micro/Apple	3.0
INTD 100	Interior Design Basic	3.0
MKTG 102	Introduction to Marketing	3.0
OPMT 192	Inventory Planning and Control	3.0

BUSINESS CERTIFICATE IN INTERIOR DESIGN

A program designed for those working in or seeking employment in areas such as kitchen outlets, furniture or drapery centres, wallpaper outlets or retail sales. Graduates may also be suited to be employed as assistants in a

design office. The courses required to obtain the Business Certificate in Interior Design are listed below.

		Credit
INTD 100	Interior Design Basic	3.0
INTD 101	History of Furniture	3.0
INTD 102	Interior Design Drafting 1	6.0
INTD 104	Marketing	1.5
INTD 200	Color	3.0
INTD 202	Interior Design Drafting 2	6.0
INTD 301	Graphic Presentation	3.0
INTD 302	Interior Design Drafting 3	3.0
INTD 304	Space Planning 1	3.0
INTD 305	Detailing and Materials	3.0
INTD 307	Materials	1.5
INTD 400	Directed Study Project	1.5
INTD 404	Space Planning 2	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
	Electives	

Suggested Electives

Electives should be chosen to complement career goals. The following electives are suggested as a guide for a standard path of studies. Variations must be approved by a Program Advisor.

		Credit
ADMN 110	Management 1	4.5
ADMN 141	Business Computer Fluency/Apple 2 Word Processing	2.0
ADMN 145	Managing Change	2.0
ADMN 204	Personnel Management	4.0
ADMN 205	Selection Interviewing	4.0
ADMN 211	Management 2	4.0
ADMN 222	Organizational Behavior 1	3.0
COMP 103	Data Processing Intro Micro/Apple or	3.0
COMP 105	Data Processing Intro Micro/IBM PC	3.0
MKTG 309	Marketing Research 1	4.5

Faculty

D. Hudson, Part-time Studies Coordinator

BUSINESS CERTIFICATE IN FLEXTIME HOSPITALITY; Includes the Pacific Rim Institute of Tourism Certificate

Not yet available. Call 432-8252 for information.

COMBINED BUSINESS AND ENGINEERING TECHNOLOGY CERTIFICATE PROGRAMS

Operations Management
Industrial Management
Technical Marketing

OPERATIONS MANAGEMENT

Operations Management offers students the opportunity to acquire the techniques needed to solve complex business problems that have applications to both the business and engineering fields.

The British Columbia Institute of Technology will award combined Business and Engineering Technology Certificates to students who successfully complete 15 units of study drawn from both schools. The object of these certificates is to provide a course of studies with a general business base and the flexibility to include engineering courses to suit the interest of the individual.

INDUSTRIAL MANAGEMENT CERTIFICATE

		Credit
ADMN 124	Supervisory Skills	3.0
BCOM 180	Business and Technical Report Writing	3.0
COMM 181	Business and Technical Correspondence or	3.0
FMGT 109	Accounting for the Manager	3.0
OPMT 198	Productivity Engineering 1	3.0
OPMT 298	Productivity Engineering 2 (choice of option)	3.0
TCOM 180	?	3.0
	(6) Pre-approved Engineering Electives	
	(3) Pre-approved Business Electives	

TECHNICAL MARKETING CERTIFICATE

COMM 170	Business Correspondence	3.0
COMM 171	Business Reports	3.0
COMM 183	Technical Report Writing	3.0
MKTG 101/201	Marketing 1 and 2	7.0
MKTG 219	Professional Sales	3.0
	Pre-Approved Business Electives	7.5
	Pre-Approved Engineering Electives	21.0

The electives will be drawn from a Business or Engineering Technology and must form an acceptable program. In some cases it may be necessary to devote two or three units to technical mathematics. Students must have a complete program approved in advance.

COMM 160 Basic Introduction to Business and Technical Communication plus one additional business elective can, upon request, be substituted for COMM 180 Technical Communication.

EMPLOYMENT SPECIFIC CERTIFICATES

Court Reporting
Legal Steno/Typist
Medical Office Assistant

COURT REPORTING - 3 YEAR CERTIFICATE PROGRAM

CORT 935 Year 1

CORT 936 Year 2

CORT 937 Year 3

This three year program consists of three semesters of three months each year. Semesters include five hours per week of instruction at the Institute plus approximately 10 hours per week of home study. This comprehensive program will enable successful graduates to seek employment as fully qualified court reporters. Students will be able to record court proceedings on a stenographic machine which types phonetic shorthand at 200 wpm and transcribes them to typewritten format. Much effort is required to achieve proficiency in the use of the stenographic machine. Curriculum includes English, legal terminology, medical terminology, transcription, stenographic shorthand and operation of the judicial system. Employment opportunities are currently exceptionally good and exist within the judicial system as well as with the RCMP and lawyers. Prerequisite: Graduation from grade 12 plus a typing speed of 40 wpm. A good command of the English language is essential and working experience in a related field is beneficial.

LEGAL STENO/TYPIST CERTIFICATE PROGRAM

CORT 931 Part 1 (30 hours)

CORT 932 Part 2 (54 hours)

This legal steno/typist certificate program will appeal to those seeking advancement into this clerical specialty. The first part is an orientation to legal stenography which will enable students to decide if they wish to pursue this career. The second part includes theoretical and practical work in legal paperwork, documentation, correspondence for law in the fields of civil and criminal, litigation, divorce, labor law, wills and estates, corporate and conveyancing. Graduates will be qualified as junior legal stenographers and may work in insurance, estate companies, large businesses and with notaries public. Prerequisite: Typing speed of 45 wpm; shorthand is desirable.

MEDICAL OFFICE ASSISTANT CERTIFICATE PROGRAM

Course Descriptions

OFFC 935 Medical Office Assistant: Medical Transcription (36 hours) — Designed for persons employed as medical office assistants or students taking medical office assistant training who require additional medical transcription instruction and experience. Of assistance to persons employed in clinics, doctors' offices, hospitals and other medical areas needing transcription experience. Includes transcribing medical letters, consultations and admissions from tapes; surgical, pathology and special consultation reports. Students will utilize dictaphone equipment and typewriters in this course. Students enrolling in this course

should have a medical background, or be working or training to work in a medical office. This is one of five courses in this comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete MOA: Medical Transcription, MOA: Anatomy and Physiology, MOA: Clinical Procedures, MOA: Office Practice, and MOA: Terminology. Prerequisite: OFFC 937

OFFC 936 Medical Office Assistant: Anatomy and Physiology (42 hours) — Successful graduates of this program will understand human anatomy and physiology. Students learn the parts of the body and how they work together. Course content includes an analysis of the body system and its diseases including the medical terms which describe them. Transcription of medical letters and reports is also included. This is one of five courses in this comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete MOA:Anatomy and Physiology, MOA: Clinical Procedures, MOA: Office Practice, MOA: Terminology, and MOA: Medical Transcription.

OFFC 937 Medical Office Assistant: Terminology (45 hours) — Successful graduates of this program will be able to use basic medical terms and know how to spell and pronounce them. Of great value to students who are pursuing the MOA certificate program and of interest to others who need to understand medical terminology such as lawyers, insurance personnel and counsellors. Course content is concentrated; most students require a great deal of home study to absorb the material. This is one of five courses in this comprehensive medical office assistant certificate program. A medical office assistant certificate is presented to students who successfully complete MOA: Terminology, MOA: Clinical Procedures, MOA: Office Practice, MOA: Anatomy and Physiology, and MOA: Medical Transcription.

OFFC 938 Medical Office Assistant: Office Practice (36 hours) — Students will learn to perform the clerical duties associated with medical office assistance. Essential for students who must understand medical forms, perform private and insurance billing, know about community resources and be proficient in the day-to-day operation of the medical office. This is one of five courses in this comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete MOA: Office Practice, MOA: Clinical Procedures, MOA: Terminology, MOA: Anatomy and Physiology, and MOA: Medical Transcription.

OFFC 939 Medical Office Assistant: Clinical Procedures (36 hours) — Students will learn the use of medical equipment, how to perform laboratory tests and assist physicians with specific examinations. This course is about 60% theory and 40% hands-on training. Students should have basic secretarial skills before enrolling. This is one of five courses in this comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete MOA: Clinical Procedures, MOA: Office Practice, MOA: Terminology, MOA: Anatomy and Physiology, and MOA: Medical Transcription

FOOD AND HOSPITALITY TRADES

Course Descriptions

HOSP 903 Cooking TQ Refresher (60 hours) — Provides students with the necessary theory to enable them to write the provincial cooking examination. Students who enrol in this course require working knowledge of cooking and should intend to write the Ministry of Labour's Cooking Trades Qualification exam. Topics include tools and equipment; meats, fish and poultry - refrigeration, freezing, thawing, cutting, trimming, preparation, roasting, baking, grilling, broiling; sauces and stocks; entrées and main dishes; potato and vegetable cooking; farinaceous and cereal dishes; egg dishes; soups; short-order work; delicatessen, appetizers and cold buffets; breads and buns; pies, cakes and desserts.

HOSP 914 Cake Decorating Basic to Advanced (30 hours) — Persons with artistic ability and a knack for creative design will find this course develops a skill which could bring pleasure, a second income or even a career. Teaches the various techniques involved in professional cake decoration. Students learn the art of coating cakes, applying borders, writing and flowers on cakes, color combinations, color tinting, non-icing decorations and surface textures. Upon successful completion of this hands-on course, students will be able to decorate many types of cakes including wedding and other specialty cakes.

Employment may be sought with a bakery or graduates may opt for self-employment.

BUILDING SERVICE MANAGEMENT TRADES

Course Descriptions

BSMT 910 Building Service Worker Basic (30 hours) — Persons interested in seeking employment as building service workers or needing to understand the complexities of industrial cleaning will find this course useful.Instruction is given in use of chemicals,the care of floors and carpets, use of maintenance equipment, washroom sanitation, employee relations, repair and maintenance of small equipment. Graduates may seek employment in maintenance departments or janitorial firms.

BSMT 911 Building Service Worker Supervisory (24 hours) — Designed for maintenance managers, maintenance crew supervisors, executive housekeepers in hospitals and institutions, hotels, cleaning contractors and other managerial positions within the building service worker industry. Instruction is theoretical with some hands-on training. Students learn to deal effectively with problems common to entire buildings rather than specific cleaning jobs. Employee relations and morale, as well as advanced cleaning techniques, are explored. Successful graduates of this course may lead a large cleaning crew or choose to become self-employed.

EMPLOYMENT SPECIFIC TRAINING

OFFC 914 Vocational Instructor Training (24 hours) — Persons who wish to teach who have not had previous teaching experience will benefit from this course. Of benefit to potential instructors who want to teach technical, applied technology, vocational and commercial subjects, part-time. Includes classroom/shop teaching techniques, how to develop the curriculum, teaching method, learning materials for the course/program. Successful students will learn how to effectively pass on their knowledge to others.

OFFC 919 Security Officer Training (36 hours) — For persons 19 years of age or older seeking employment as a security officer. Instruction includes what is expected of a security officer, physical security and locks, parking and traffic control, fire control, bomb threats and search techniques, in-house security, first aid, cooperation with the police, legal aspects and rights of a security officer. Upon successful completion, students will have the necessary training to perform general security guard duties. Applicants will be screened.

OFFC 925 Cashier Training (18 hours) — Provides practical training in the operation of various types of electronic cash registers. Theoretical instruction is given in clerical procedures, ringing off and cashing out, and public relations. The course is approximately 80% hands-on training. Successful graduates will have marketable skills and may seek employment in cashier/clerk positions.

OFFC 950 Dental Office Co-ordinator 1 (36 hours) — For persons with basic office skills who wish to specialize in dental office practice. Instruction includes telephone manners, scheduling appointments, billing (private and insurance), bookkeeping, purchasing supplies, inventory and keeping dental records. Because instruction commences at an intermediate clerical level and progresses to the specialization, students should have a foundation in office skills before enrolling in this course. Successful graduates will be able to perform the duties of a dental receptionist.

OFFC 951 Dental Office Co-ordinator 2 (36 hours) — This course provides further training for those students who have completed OFFC 950. Instruction will include anatomy and physiology, oral embryology and hostology, pharmacology and pain control, medical emergencies in the dental office and special needs patients, building a good dental health team, office meeting, conflict management and problem solving, and an introduction to working with dental computers.

Course Descriptions

ADMN 100 Microeconomics — The major areas studied are the product and resource markets. Students analyze supply and demand, how production costs vary and how prices are determined in various market structures. In addition, resource allocation and economic policy implications are explored. **4 credits**

ADMN 110 Management Fundamentals - An insight into the basic nature of business problems and the administrative process involved in handling them, with emphasis on the personnel management function. Study and discussion is undertaken of actual business situations illustrating problems frequently met in industry requiring managerial analysis, decision and action. **4.5 credits**

ADMN 122 Managerial Skills for Administrative Assistants - For persons preparing for career advancement to positions such as administrative assistant or executive secretary. Students completing this course are comfortable in broadening the scope of their work, increasing their responsibilities and taking initiative in their administrative functions. Topics include: role of the secretary; time management principles; expressing ideas; listening skills; handling criticism; group discussion skills. Student participation is stressed to develop communication skills and learn from the experience of others. **3 credits**

ADMN 123 Office of the Future Management and Supervision - Assists the progressive manager to cope with the impact of technological change in the present and future office environment. Lectures, discussions, case studies and role playing describe and explain the influence that developments in word processing, data processing and communication technology have on the manager's role. Topics include activities of the office manager; systems in the office of the future; human factors and behavioral implications; analysis; design and implementation of the office of the future. **3 credits**

ADMN 124 Supervisory Skills - Designed for new supervisors or aspirants for leadership responsibilities in large or small companies, institutions, government departments, municipalities, or associations. Students increase their confidence and abilities as leaders and establish a foundation for further training in supervision and management. Persons taking the first step into supervision study delegation, grievances, work planning, and roles and relationships within an organization. **3 credits**

ADMN 127 Training Techniques - Useful to people responsible for personnel training in business, industry, government and institutions. Members of personnel departments contemplating a training program, and supervisors involved with on the job training, will be particularly interested. The student develops a good grounding in current training methodology, techniques and aids. Topics include learning theory, determining training needs; writing objectives, designing training programs using outside resources, and evaluation. **3 credits**

ADMN 128 Occupational Safety and Health - A practical course conducted by the B.C. Safety Council for those responsible for occupational safety and health in an industrial setting including managers, supervisors, shop stewards, safety committee members, members of the industrial relations or personnel department. Topics include: Worker's Compensation Act; Factories Act; rules and regulations; types of organization structure; the role of the committee; creating a 'thinking' state of mind; pros and cons of reward systems; union/management cooperation; other ways and means of getting this important job done. **3 credits**

ADMN 129 Records and Information Management 1000 - An overview of records management and the basic principles, techniques and operations in the creation, use and maintenance of records for people involved with records and information management. This course will provide an "ideal program" as a standard to apply to a current work environment. **3 credits**

ADMN 133 Integrated Software ENABLE - This course teaches the use of microcomputers in business applications. ENABLE is designed for students beginning to learn how to use personal computers, but is also sophisticated and powerful enough to appeal to advanced students. ENABLE is integrated software combining word processing, spreadsheet, database, graphics, and telecommunications applications in one, easy to use package. The data communications component provides an overview of how to attach a personal computer through a phone line to other computers - large or small. **3 credits**

ADMN 135 Automated Office Systems Management - The focus of this course is key elements of integration, analysis, and management of the fast changing office environment. Study is made of the micro-computer and software packages that enable

the personal computer to accomplish varied office tasks. Local area networks and other telecommunication devices are discussed as a means of integrating office systems. Students will have a better understanding of technological concepts and terminology upon completion of the course, and could be more effective in dealings with vendors and suppliers of automated equipment and services. **3 credits**

ADMN 140 Business Computer Fluency/Apple 2+ Spreadsheets - This introductory level course is designed for individuals with little or no prior exposure to computers. The content covers spreadsheet applications, design and manipulation. A Visicalc One computer is reserved for the personal use of each student. A comprehensive instructional manual is included as part of the course fee. **2 credits**

ADMN 141 Business Computer Fluency/Apple 2+ Word Processing - This introductory level course is designed for individuals with little or no prior exposure to computers. The content covers document creation, editing, storage and printing, spelling checker, mailing lists and procedures. Uses Magic Window II, Magic Words and Magic Mailer. A computer is reserved for the personal use of each student. A comprehensive instructional manual is included as part of the course fee. **2 credits**

ADMN 145 Managing Change - Using experiential techniques, the course deals with the challenges of managing in the contemporary environment. Concerned with conflict, planned change and organization development, content covers each of these subjects and offers an opportunity to facilitate organizational adaptability. **2 credits**

ADMN 170 Government and Business - A basic course helpful to persons seeking a career in Federal, Provincial or Municipal Government and to business people needing to understand the nature, extent and rationale of government involvement in business. Lectures, group discussions and selected readings explore government regulation and support of business enterprises in Canada; government monopoly and combines control policy; legislation and regulation in banking, broadcasting, transportation, labor consumer protection; support programs for various types of economic development; taxation; licensing; marketing boards. **3 credits**

ADMN 180 Computer and Technology Law - An introductory computer law course of interest to students in the financial management and administrative management areas. Students study the practical application of current law relative to technological change and the use and development of computers with an emphasis on product liability and professional negligence, electronic transfer, computer fraud, criminal law, privacy and the confidentiality of data bank resources, patent and copywrite and special types of contracts in computers and technology. **3 credits**

ADMN 181 Basic Word Processing - Offers the basic principles of microcomputers and covers all the functions normally associated with word processing. Students will become familiar with the processes of creating, editing, filing and printing all types of business correspondence. **1.5 credits**

ADMN 194 Multimate Word Processing - A self paced course in Multimate word processing that will cover all levels of word processing. After basic instruction and practice creating documents with given formats, the main emphasis will be on creating documents,complex editing, spell check, statistical typing, print parameters, merge printing, key procedures, library creation, and special applications. **4.5 credits**

ADMN 195 Word Perfect Word Processing - A self paced course in Wordperfect word processing covering all levels of word processing as well as special features such as thesaurus usage, spell check, special application of the menu. Students should have some keyboarding skills to receive the maximum benefit from this course. **4.5 credits**

ADMN 196 Wang Word Processing - This hands-on course is for those who wish to learn all aspects of Wang word processing. It will start with basic word processing and then continue to complex editing, sorting, setting up and using glossaries, batch work, and finally math pack and financial reports.**4.5 credits**

ADMN 200 Macroeconomics - Develops an understanding of the organization and operation of the Canadian Economy in an international setting. The theoretical tools of the economist are used to expand the concepts of national income, employment, inflation, money and banking, international trade and growth. An appreciation of the relationship between economic theory and economic policy is provided. **6 credits**

ADMN 201 Counselling 1 - Demonstrates that communication skills can be learned and that, through training, everyone can learn to become a more effective communicator. The instructional method focuses on learning to discriminate various levels of communication through lectures, listening, observing and practising. Discrimination training focuses on empathy, respect, genuineness, concreteness, self-disclosure and confrontation. Live interaction and observer feedback are essential aspects of this developmental training. **3 credits**

ADMN 202 Course Design: Advanced Training Techniques - This sequel to ADMN 127 develops skills to effectively plan, design, construct and evaluate training programs and courses. This course is intensive and requires considerable commitment from participants to actively demonstrate and assess their developing skills. **3 credits**

ADMN 203 Instruction and Facilitation: Advanced Training Techniques - As a sequel to ADMN 127, this course develops skills necessary to lead and assess training sessions, workshops, simulation exercises, and group sessions. This course is intensive and requires considerable commitment from participants to actively demonstrate and assess their developing skills. **3 credits**

ADMN 204 Personnel Management - An introductory course for those who have recently joined a personnel or industrial relations department or who plan to enter the field. Also valuable to supervisors or managers who must implement or are accountable for administering personnel policies. The student develops an understanding of the personnel function, relationship to management and responsibility to employees. Topics cover major functions emphasizing the practical application of personnel policies and procedures, salary administration, benefits administration and employee relations. **4 credits**

ADMN 205 Selection Interviewing - This course is presented for people in the fields of personnel, management, supervision, or anyone involved in interviewing applicants for employment. It identifies techniques, styles, stages, uses, pitfalls and key points in interviewing, with particular emphasis on questioning techniques and selective listening. Class limited to 20 students. **4 credits**

ADMN 206 Psychological Testing - Introduces various tests such as aptitude, personality, and interest measures. Administration scoring and the design of 'in-house' testing programs are covered along with uses of tests in selection, promotion, training and individual career planning, including relocation counselling, testing and human rights, discrimination and manpower planning. **3 credits**

ADMN 207 Paralegal Aspects of Personnel Practice - Participants study current paralegal issues in human resources. This course supplements other personnel courses and enables the personnel practitioner to interpret corporate goals and positions in sources of help, appeal/adjudication channels and when to retain professional assistance. **3 credits**

ADMN 208 Municipal Law - In addition to an overview of the B.C. Municipal Act and other provincial statutes governing local government activities, this course covers areas of administrative practice. Additional topics include: municipal powers and duties; municipal councils; elections; by-laws; acquisition and disposal of land; contracts and franchises, revenues, assessment and taxation; B.C. statutes and case law relating to the principal services provided by municipal authorities. **3 credits**

ADMN 211 Management 2 - A continuation of the study of functions of management begun in ADMN 110. Prerequisite: ADMN 110. **4 credits**

ADMN 222 Organizational Behavior 1 - For persons with no formal training in organizational behavior, a study of basic behavioral concepts and their applications to management situations. These include operational definitions or terminology common to psychology and other social sciences, and allows the student to easily understand the information conveyed in all areas of organizational behavior studies. The beginning concentrates on the individual, focusing on the determinants of behavior - heredity, culture, motivation, perception, attitudes, learning and leadership. The conclusion focuses on understanding **3 credits**

ADMN 235 Managing the Integrated Office - Through study of the principles and practices of managing the integrated, information flow office are examined. Discussions emphasize the terms, concepts, and applications essential to students concerned with an office systems and services, particularly in the contemporary context of the increasingly automated office environment. Course work covers word and information processing technology, as well as advanced office technology such as telecommunications. Additionally, study is made of the personnel, equipment, and financial management of the integrated office environment. **3 credits**

ADMN 240 Voice Communications Systems - This course is for people handling records and information processing equipment who need a better understanding of its interfacing with telephone technology. Students learn telecommunications media for information interchange in various forms such as: voice, data, text, and/or image. Course discussions examine how the telephone is becoming increasingly more important as a communications link in the modern office at lower costs, expanded capability, and more reliable service than the traditional communications channels. Students learn how the conventional telephone system works and how systems parts are being replaced by advanced technology. **3 credits**

ADMN 241 Business Data Communications 1 - This course is for non-technical students who need to know the equipment and applications used in business data communications, to enable them to work with data processing people, and develop a working knowledge in this emerging field of automation, to enhance and expand their career opportunities. This course provides an understanding of the technical aspects of data communications for office administrators who desire to know more about a decision-making environment involving telecommunications equipment for the automated office. The course examines the history of data communications, physical and media facilities, terminal equipment, protocols, networks, and systems software. **3 credits**

ADMN 245 Designing the Integrated Office - Students learn in this course the principles of designing and of managing an office environment as it becomes increasingly automated. The course strives to explain how various information technologies are combined to improve work done in the contemporary office. Management concerns and decisions related to the person/machine interface are discussed, explanations are given of information systems and their component parts of input, processing, replication, storage, and distribution. Study is made of the historical aspects of the traditional office, and the current trend of transition into full automation in the context of management information systems. **3 credits**

ADMN 300 Management Policy - Lectures, case studies and business exercises, simulated through a comprehensive computer exercise, provide a comprehensive view of the general management role and provide practice in making decisions in such areas as sales, price and production. Case studies examine the relationship between the business opportunity and the definition of business purpose, product and general policy, and strategy for the guidance of business activities. **3 credits**

ADMN 301 Managerial Styles - A practical course for the supervisor, manager or student wishing to learn more about the 'people aspect' and psychology of management, with emphasis on how and why people interface as they do. Students develop a productive management style and learn how accepted theories deal successfully with managerial problem situations as they arise. **3 credits**

ADMN 302 Problem Solving and Decision Making - Participants learn to apply various techniques to problem solving and decision making with emphasis on problem analysis. Group dynamics, demonstrations, lectures and practice sessions relating to real applications prevail. Rational and creative methods, using the principle of learning through interpersonal workshops or group involvement, establish a high level of confidence in the student's ability to deal with problems effectively. **3 credits**

ADMN 303 Counselling 3 - This second phase of interpersonal communications skill development is an opportunity to practice communication skills in supervised training sessions. Focuses on the application, integration and refinement of the core dimensions: empathy, respect, genuineness, concreteness; self-disclosure and confrontation. Dyads and double dyads comprised of counsellor, client and peer-group observers combine with audio and video tapes as ongoing feedback. **3 credits**

ADMN 304 Manpower Planning - Designed for anyone in a planning organization involving "people resources". Presents the philosophy of techniques used in utilizing people potential within organizations. Topics include manpower planning; methods of evaluating present resources; future projections; sources of supply; identifying training needs; related personnel policies, budgeting and costing, and program evaluation. **4 credits**

ADMN 305 Salary Administration - Students learn the 'whys' and 'hows' of salary administration and develop a basic knowledge of techniques in this field. Topics include alternative methods of job evaluation; job description; establishing and maintaining salary schedules; administering a salary plan; general and specific adjustments for promotions and demotions; how to set up a simple plan. **4 credits**

ADMN 322 Organizational Behavior 2 - Persons in counselling situations or with leadership responsibilities who have completed part 1, will benefit from a deeper appreciation of motivation theory and its application. Students study theories of people and management and come to better understand and cope with human behavior in the world of work. Topics include organization culture attitudes and their importance in change, leadership styles, and conflict in goals and objectives. **3 credits**

ADMN 332 Labor Relations 1 - For those involved in or associated with labor relations as management or union. People in the personnel field, shop stewards, supervisors, managers and members will find the coverage of the collective bargaining process and day-to-day contract administration extremely useful, and learn to approach their responsibilities for matters covered by collective agreements with more confidence and expertise. Topics include related laws, typical contract clauses, grievance procedures, responsibilities of the supervisor and the shop steward, and current activities in the labor relations field. **4 credits**

ADMN 380 Business Law - A study of legal rules and principles which guide decisions involving the law of contracts, including the sale of goods and negotiable instruments, as well as the business associations of agency, partnership and the company. **3 credits**

ADMN 400 Special Project - An opportunity for advanced level students to do an independent, in-depth study in the business management field under the guidance of an instructor. Students take a real 'live' problem or situation that they face in their work, and tackle it with the guidance of an expert in the field. The specific objective is set by the student. Students interested in pursuing this should approach a program advisor for assistance in developing proposals for the project. **3 credits**

ADMN 406 Economic Issues for Financial Planner - A technical issues course for the noneconomist who is interested in general economics. The course will discuss interesting topics such as free trade, marketing boards, inflation, and government's role in economics. **3 credits**

ADMN 428 Management Simulations 1 - A basic introduction to decision making in a simulated organization. The student has the opportunity to run one of several companies in an industry. Decisions range through product development, price, selling strategies, production strategies and financial control. **4 credits**

ADMN 432 Labor Relations 2 - A thorough explanation of collective administration, agreements, wage issues, economic supplements, arbitration, mediation, preparation for collective bargaining and collective bargaining techniques. Prerequisite: ADMN 332. **6 credits**

BCST 101 Technical Introduction - Students are introduced to the basics of electricity, magnetism, batteries and other principles which are then applied to the equipment they will be working with. The origin of sound is traced through the entire processing and transmission system to its ultimate reception in the listener's home. The same is done with the sending and receiving of television pictures. This is an elementary introduction to explain "how things work." **3 credits**

BCST 140 Broadcast Industry Organization - For people interested in finding out how the broadcast industry operates from an organizational point of view, who want more information about the operation of our Canadian Broadcasting System and its relationship with the rest of the world. Discussions centre on individual station hierarchies, the Canadian Radio-Television and Telecommunications Commission, the Canadian Association of Broadcasters, Provincial and Regional Associations, international affiliations and associations, regulatory agencies and broadcast-related industries, and the CBC. Also offered as a Directed Study course. **3 credits**

BCST 141 Broadcast Sales and Management - Through a combination of informal lectures, guest speakers and tours of local broadcasting stations, students obtain a unique insight into the complexities involved in the operation of a broadcast outlet as a business. Lectures cover sales, sales management, advertising (theory and practice), sales and station promotion, advertising agencies, programming, an overview of economics in broadcasting, market measurement, contemporary management styles, computers in broadcasting, etc. **3 credits**

BCST 142 History and Development of Contemporary Music - Examines changes that have taken place in our music over the past few decades. Topics are approached through informal lectures and guest speakers. Considerable time is spent auditioning, analyzing and discussing recordings of the major contributors to the development of today's contemporary music. **3 credits**

BCST 143 The Music Business and The Broadcast Industry - Course topics include the roles, responsibilities and operation of talent agencies and management; concert promotion and merchandising; song writing and publishing, copyright; record companies and manufacturing, recording studios; getting "air-play" on radio stations, contracts, etc. **3 credits**

BCST 144 Writing For The Media - A practical guide to freelance writing for radio and television in preparation for writing opportunities with CBC Information Radio, CBC Television, The National Film Board and other markets. Emphasizes proper formats, writing styles, use of equipment and professional business practice, as well as assisting writers to package material for sale. **3 credits**

BCST 145 Copywriting For Radio and TV - The "how" and "why" of writing radio and TV commercials. Ideal for non-production or writing employees in broadcasting looking for a move into this area, and for anyone wishing to explore copywriting as a career. **3 credits**

BCST 146 Broadcast Advertising and Promotion - Discusses various aspects of advertising and promotion for broadcast stations, including developing promotional concepts, marketing of broadcast stations and market studies. **3 credits**

BCST 148 Interview for Radio and TV - Students will be exposed to various industry examples of interview styles and techniques, and will be encouraged to analyze them thoroughly. The class will also be required to conduct their own interviews, which will be critiqued in the classroom. The course will conclude with each student presenting a produced interview of broadcast quality to the class. **3 credits**

BCST 149 Film Reviewing - Provides the student with increased appreciation for the techniques of modern film making and the necessary skills for professional reviewing for radio, TV and print media. **3 credits**

BCST 150 Radio Broadcasting Introduction - For people contemplating a career in radio broadcasting or currently employed in non-broadcast positions in the industry who wish to move into the operations area of a radio station. Introduces broadcast equipment, station operation and hierarchies, regulations, commercial production, broadcast procedures and jargon. **3 credits**

BCST 151 Radio and TV Announcing - An introduction to basic announcing skills. This course will improve students' presentation and articulation by employing several styles and techniques of announcing practice followed by critiques and evaluation. A voice audition may be required. **3 credits**

BCST 160 Television Broadcasting Introduction - Designed for persons interested in television broadcasting as a career, and those working in non-production areas. Introduces the theory and procedures of television equipment necessary to the operation of a TV station. Participants operate equipment in production exercises to produce full-length programs. **3 credits**

BCST 161 Film For Beginners - Introduces the basics of professional film making including scripting, equipment operation and filming techniques to people who are interested in cinematography. Additional topics are optical and magnetic sound, special effects, animation, lighting and editing. Note: A laboratory fee will be assessed to cover cost of processing film. **3 credits**

BCST 162 Dramatic Writing For Film and TV - Provides a solid base for people interested in pursuing opportunities in the expanding areas of film and television dramatic script writing. As the satellite age develops, programmers are seeking more and more material to supply new programming to the dozens of available channels. This course addresses that demand and prepares students for these opportunities by discussing the many different approaches to dramatic writing, the special techniques involved, different types of scripts, marketing of material, etc. **3 credits**

BCST 163 Acting For Television - The student studies the workings of television as it affects the actor and becomes better equipped to audition for professional productions in the local market. **3 credits**

BCST 164 Scenery Construction for Film and Television - Provides an understanding of basic staging terms, how to construct basic scenic elements and read studio and scenery design plans. Some knowledge of tool use is required. **3 credits**

BCST 165 Film and Tape Techniques and Procedures - This course will broaden the scope of application and professionalism of anyone pursuing a career in the film industry. **3 credits**

BCST 167 Production Assistant for TV News - Students learn the skills and production assistant techniques used in television news. **3 credits**

BCST 168 The Role of a Line Producer - Provides the student with the tools to operate as an assistant producer or an independent producer setting up a small company. **3 credits**

BCST 169 Feature Film Analysis - The directorial styles of major film directors will be analyzed. **3 credits**

BCST 170 Broadcast Journalism Introduction - An introduction to all aspects of news operation in the broadcast industry covering basic reporting, writing and presentation of radio and TV news; newsroom operations, methods and practices; editing, line-up and content of news stories. **3 credits**

BCST 171 Broadcast News Writing - Writing techniques used in radio and TV news writing for those in the field who wish to develop additional skills, and for employees in the industry who wish to add news writing to their present skills, and for general interest. **3 credits**

BCST 172 Investigative Reporting - Anyone interested in the motives and processes of investigative reporting will find this course interesting. Although the course should not be regarded as sufficient preparation for employment as an investigative reporter, content is detailed enough to be useful to anyone contemplating a reporting career with the addition of a broader journalism course. **3 credits**

BCST 173 Sportscasting - Designed for those contemplating a career in radio or television sports broadcasting. Topics include sports reporting, sportscast organization and presentation, interviewing techniques, play-by-play, and industry background information. **3 credits**

BCST 174 Broadcast Newsroom Operations - Provides students with the opportunity to acquire practical skills in the preparation and delivery of radio newscasts. The student receives training in newsroom equipment and instruction in news writing, newscast lineup and announcing. **3 credits**

BCST 175 Introduction to Current Affairs - A course for those individuals thinking of going into current affairs as a career. Topics include researching, writing, formatting; how to put a program on the air, using audio tape recordings, and producing and directing radio programs in studio. **3 credits**

BCST 188 Props for Film and Television - Designed for individuals who have an interest in props design and procurement for motion picture and television production. Topics will include script breakdown, what questions to ask about props, how to build props, deciding whether it is cheaper to buy or build props, and making props. **3 credits**

BCST 189 Music Scoring for Film - For those individuals who have a background in music and an interest in music scoring for film and television. Students will study the aesthetics and techniques of producing music for this specialized medium, and will follow the scoring process step-by-step. **3 credits**

BCST 223 Television Production Planning - Enables students to plan the elements necessary to guarantee a TV production which meets the professional standards of the television production industry, and organize and conduct pre and post production meetings as the producer/director of a proposed series pilot. Prerequisite: BCST 220. **3 credits**

BCST 252 Radio: Commercial and Audio Production - Learn how to produce commercials and other audio features using modern radio commercial production and recording theories and techniques. For those who have completed BCST 150 or who have industry experience. **3 credits**

BCST 253 Radio Operations Lab - Most students find upon completion of BCST 150 that they are just becoming familiar with equipment and operations when the course ends. This course provides 36 hours of advanced practice in simulated station operations. Group and individual critiques are made after simulation to evaluate performance. **3 credits**

BCST 260 Television Production Techniques - Offers practical application opportunities for students who have completed BCST 160 and BCST 323. Each session consists of a lecture followed by setup and shooting of interviews, demonstrations, commercials and promos, including the introduction of special techniques which allow students to add more professional polish to their work. **3 credits**

BCST 262 Writing Scripts that Sell - This course is taught by top professionals in the field of television script writing and production. Of interest to individuals who wish to pursue script writing as a career. **3 credits**

COMM 183 Technical Report Writing - Gives writers from technical or industrial backgrounds practice in problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems and describing methods and products. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries and formal report format. Persuasive presentations, meetings, and effective use of graphics are also covered. **3 credits**

COMM 196 Writing User Friendly Manuals - This 18-hour course is for anyone who writes user manuals. It covers planning, researching, organizing, formatting and writing the manual and testing and packaging the finished product. It emphasizes techniques for translating technical material for the non-technical reader. The course is offered in weekend and 3-day formats at the Burnaby and Downtown campuses. **1.5 credits**

COMP 101 Data Processing Introduction - Introduces the principles and concepts of business data processing to people with little or no programming experience. Will be useful to those who need a better understanding of computer operations in their firms. A prerequisite for most systems and programming courses. Lectures and laboratory sessions with "hands-on" computer practice include an introduction to the computer: input/output, hardware, computer use; background, data representation, applied systems, files, magnetic tape and disk, master and transaction files, data entry and control, batch processing, on-line data entry, computer programming, flowcharting, input/output, processing, decision, arithmetic and branching. Students will write and test five programs in BASIC programming language. **3 credits**

COMP 102 Data Processing Introduction - A one-week intensive course covering material presented in COMP 101. Full days (0900-1700) plus some evening work required. See COMP 101 for course content. **3 credits**

COMP 103 Data Processing Micro/Apple - Introduces the principles and concepts of business data processing to people with little or no programming experience and those needing a better understanding of computer operations in their firms. As a prerequisite for most of our systems and programming courses, this course includes lectures and laboratory sessions with "hands-on" microcomputer experience as an introduction to the computer; input/output, hardware, uses of computers, data representation, applied systems; files, magnetic tape and disk, master and transaction files, data entry and control, batch processing, on-line data entry; computer programming, flowcharting, input/output, processing, decisions, arithmetic and branching. Students write and test five programs in BASIC language. **3 credits**

COMP 104 Computers in Business - For those with a basic understanding of programming and computer systems who are not directly involved in data processing but require familiarity with current terminology and concepts used in the computer industry. Students learn to communicate effectively with data processing personnel, recognize the potential use of computers in a business environment and understand the implications of installing an in-house computer or data centre system. Topics include "state of the art" computer equipment and programming; data entry techniques; batch on-line and distributed processing; telecommunications; control and security; criteria for evaluating and selecting computer systems for a medium-sized company and the simplifications computers have on the financial and staff resources of companies. Prerequisite: COMP 101/102/103/105. **3 credits**

COMP 105 Data Processing Micro/IBM PC - Introduces the principles and concepts of business data processing to people with little or no programming experience. See COMP 101 and COMP 103 for a detailed description. Students receive "hands-on" microcomputer experience using the IBM PC. **3 credits**

COMP 160 Computer Systems Introduction 1 - Introduces the basic definition and design of computer systems. Emphasis is on the fundamentals of systems analysis including development of system objectives, problem definition, information gathering, effective written and verbal communication (particularly with user department personnel) about systems problems and possible computer solutions. The course presents the systems development process and covers basic systems theory, the systems development cycle, information gathering, flowcharting, report writing, forms design and presentation techniques. Additional techniques and their applications to common business systems are presented in COMP 260. Prerequisite: COMP 101/102/103/105. **3 credits**

CPIC 050 Principles of Inventory Control - An introductory course that covers basic practice in inventory planning and control applicable to a wide range of industries, including: physical control and custody, forecasting, replenishment quantities and timing, material requirements planning (MRP), distribution, purchasing, integrated inventory control systems and just-in-time production. This course provides an overview of the material covered by courses CPIC 100 through CPIC 600. **2 credits**

CPIC 100 Master Planning - A company, like an airliner, needs a flight plan to know where it is going. For a manufacturing facility, the production plan is that flight plan since it expresses the desired rate of production in aggregate terms for each month. The course includes production planning, forecasting policies and procedures, Master Production Schedule (MPS) policies and procedures, factory requirements planning, and measuring performance. CPIC 100 is the lead-off course in the CPIC 100 through CPIC 600 series. It is recommended (but not essential) that students take this course first. **3 credits**

CPIC 200 Inventory Management - Encompasses the principles, concepts and techniques for deciding what items to order, how much to order, when they are needed, when to order, and how and when to store them. Topics include inventory functions, inventory costs, independent versus dependent demand, stores management, inventory segregation, lot sizing (independent), replenishment rules (independent), safety stock (independent), distribution inventories and aggregate measures. **3 credits**

CPIC 300 Material Requirements Planning (MRP) - MRP or time-phased material requirements planning is a set of techniques that evolved from an approach to inventory management which combines calculating dependent demand items in a time-phased format. Topics include bills of material, MRP concepts, lot sizing and safety stock, closing and loop, master production schedule concepts and master production schedule types. **3 credits**

CPIC 400 Capacity Management - Capacity Management is the function of establishing, measuring, monitoring and adjusting limits or levels of capacity in order to execute manufacturing schedules. Topics include: establishing and maintaining work centre capacity, the capacity requirements planning process (CPP), analyzing results and providing solutions, and controlling capacity. **4 credits**

CPIC 500 Production Activity Control - Production Activity Control (CPAC) includes the principles, concepts and techniques for deciding which manufacturing jobs should be worked on and when. The course includes push production systems, pull production systems, order release, shop floor control, shop floor data collection and repetitive/process manufacturing. **4 credits**

CPIC 600 Just-In-Time Production - JIT production means buying and producing in very small quantities just in time for use. The absence of extra inventories creates an environment in which it becomes extremely important to run an error free operation because there is no buffer of excess parts to keep production going when problems occur. Topics include: risks and benefits, the JIT philosophy, worker involvement, inventory issues, total quality, vendor programs, plant layout and equipment, and implementation. **4 credits**

FMGT 101 Accounting 1 - Permits persons with little or no accounting background to become familiar with the techniques of working through the full accounting cycle. It provides theoretical and practical training in basic accounting as preparation for FMGT 201. Topics include accounting as an information system; introduction to accounting theory; income measurement; traditional record-keeping procedures; the accounting cycle; special journals; cash; investments and receivables. **4 credits**

FMGT 106 Credit and Collections - A detailed examination of credit granting, collection techniques and credit philosophy in all levels of business prepares the student to assist the credit manager of a large or small business in any area of the subject. Topics include determining credit risk; credit instruments and collateral security; types of consumer credit and credit cards; sources of consumer credit information; collections; credit department management. **4 credits**

FMGT 109 Accounting for the Manager - For the manager who wants to understand basic accounting principles without taking a formal accounting course. The student studies the accounting function and the services it provides the manager and learns to interpret statements, reports, budgets, etc., in managerial decision making. Topics include the accounting cycle, inventory valuation and control depreciation methods, credit control, budgeting and analysis of financial statements. **3 credits**

FMGT 112 Finance for the Manager - For the manager or entrepreneur who wants to understand the basic principles of business finance without formal study in finance or the usual preparatory courses for formal study. The student develops a working understanding of business finance, cash flow management and financial planning in large and small businesses. **3 credits**

FMGT 113 Introduction to Accounting 1 - A flexible entry correspondence course that permits individuals with little or no accounting background to become familiar with the techniques of working through the accounting cycle. It provides theoretical and practical training in basic accounting and serves as preparation for accounting 2. On successful completion of the course, students can expect to understand basic accounting functions and to have an appreciation of accounting history which is the foundation for accounting procedures. **3 credits**

FMGT 114 Introduction to Accounting 2 - A flexible entry correspondence course which follows FMGT 113. It permits those with a basic course in accounting to expand their knowledge of financial and management accounting techniques through theoretical and practical training in these areas. Students who complete the practice set of books are awarded an extra half credit. The practice set is a separate purchase with an additional marking fee. **3 credits**

FMGT 115 Accounting 1L - Enables students to start the basic course in accounting in January. It is the equivalent of FMGT 101 and the first six weeks of FMGT 201, for a total of 18 weeks of the 30 week presentation. The balance of the course, FMGT 215, may be taken in either May or September. For a description of the course content see FMGT 101/201. **6 credits**

FMGT 116 Principles of Accounting (Accelerated) - This course, equivalent to FMGT 101/201, presents a full introduction to accounting in 15 weeks. Prospective students are cautioned against enrolling in this course without a strong background in accounting. Students must be prepared to spend a minimum of 10 hours per week out of class working on the course material. See FMGT 101/201 for details. **6 credits**

FMGT 201 Accounting 2 - The follow-up to FMGT 101, topics include inventory, long-lived assets, liabilities, forms of business organizations, cash-flow and working capital analysis, manufacturing accounting, management accounting, consolidated statements, analysis of financial statements and price level changes. Prerequisite: FMGT 101. **6 credits**

FMGT 215 Accounting 2S - Follow-up course to FMGT 115, enabling students to complete the last 12 weeks of the basic accounting course. See FMGT 201 for details. Prerequisite: FMGT 115. **4 credits**

FMGT 301 Cost and Managerial Accounting 1 - Emphasizes the role of the management accountant, cost terms and purposes, cost-volume-profit relationships, job order accounting, budgeting, responsibility accounting and standard costs. Prerequisite: FMGT 201. **4 credits**

FMGT 302 Financial Accounting 1 - For students with basic accounting knowledge to broaden their understanding of the accounting process and its underlying theory. This course and FMGT 402 prepare them for career advancement and advanced study in accounting. Topics cover development of financial information for external circulation; the accounting process from a more analytical standpoint; the income statement and balance sheet; cost, valuation, presentation and income measurement problems associated with current assets and current liabilities. Prerequisite: FMGT 201. **4 credits**

FMGT 305 Cost Accounting Computer Systems - Direct costing and the contribution approach; cost-volume-profit analysis; cost analysis for managerial planning and decisions; inventory planning, control and valuation; budgeting and profit planning; standard costs; cost and price variance analysis; capital budgeting. Applications on HP 3000 will be studied during late term labs. Prerequisite: FMGT 201. **4 credits**

FMGT 307 Finance 1 - Those with little or no knowledge of financial management will study the various methods of optimizing the economic position of a firm. Middle management people in business finance will learn to make the best decisions on the financing of a firm. Topics include control and financial management of the business firm, profit planning, cash and capital budgeting and inventory control. Prerequisite: FMGT 201. **4 credits**

FMGT 310 Auditing 1 - Discusses auditing principles, specific techniques in analytical auditing and some asset classifications. Students study the meaning and purpose of the audit function and are introduced to techniques and procedures. Topics include history, professional ethics, internal control, auditing EDP systems, gathering evidence, audit work papers. Prerequisite: FMGT 201. **4 credits**

FMGT 314 Financial Accounting 1 and 2 Accelerated - This course is equivalent to FMGT 302/402 and offers both financial accounting courses in 15 weeks. Prospective students are cautioned against enrolling in the course unless they have a reasonable background in financial accounting and are prepared to spend a minimum of 12 hours per week out of class working on the course material. See FMGT 302/402 for details. Prerequisite: FMGT 201. **12 credits**

FMGT 316 Taxation 1 - Introduces individuals with little or no income tax knowledge to the basics of Canadian income tax. The course constitutes the first half of taxation with FMGT 408 completing it. Topics include tax information sources, residency, classes of taxpayers, employment income, business income, investment income, capital cost allowance and capital gain rules. Prerequisite: FMGT 201. **3 credits**

FMGT 319 Cost and Managerial Accounting 1L - Designed to permit students to start cost accounting in January, this course is equivalent to FMGT 301 and the first 6 weeks of FMGT 401 for a total of 18 course weeks of the 30 week presentation. The remaining 12 weeks can then be completed either by taking FMGT 401 over 6 weeks, 2 nights per week commencing in May, or over 12 weeks commencing in September. See FMGT 301/401 for details. Prerequisite: FMGT 215. **6 credits**

FMGT 320 Financial Accounting 1L - Permits students to start financial accounting in January. The course covers the equivalent of FMGT 302 and the first 6 weeks of FMGT 402 for a total of 18

weeks of the 30 week presentation. The remaining 12 weeks can be completed either by taking FMGT 402 over 6 weeks, on a 2 nights per week basis commencing in May, or over 12 weeks commencing in September. See FMGT 302/402 for details. Prerequisite: FMGT 215. **7 credits**

FMGT 401 Cost and Managerial Accounting 2 - Enables the student who has completed FMGT 301 to understand cost accounting techniques which will assist management in planning, control, income determination and decision making. The course emphasizes direct costing, relevant costs, cost allocation, capital budgeting, inventory planning and valuation, joint and by-product costs, process costing, payroll; factory ledgers and decentralization and transfer pricing. Prerequisite: FMGT 301. **6 credits**

FMGT 402 Financial Accounting 2 - Completes the study of intermediate accounting necessary for employment in more responsible accounting positions. Topics include cost, valuation, presentation, income measurement problems associated with long term assets and liabilities (where appropriate), shareholders' equity accounts, income tax allocation, statement of charts in financial position, statements from incomplete data, accounting changes and price-level and fair-value accounting. Prerequisite: FMGT 302. **6 credits**

FMGT 404 Finance 2 - Instructs students in raising capital to finance a firm. Topics include the cost of capital; short, medium and long term financing leasing; refinancing; security analysis; the Canadian capital and money markets and pension portfolios as they affect business decisions of the Canadian firm. Prerequisite: FMGT 307. **6 credits**

FMGT 406 Auditing 2 - Follow-up to FMGT 310. The student studies general auditing principles and specific audit procedures and learns to critically assess accounting procedures. Topics include auditing assets, liabilities, owner's equity, revenues, cost, expenses, financial statements and audit reports. A short audit case will be undertaken. Prerequisite: FMGT 310. **6 credits**

FMGT 408 Taxation 2 - Students expand on the study of Canadian income tax begun in FMGT 316 and become aware of the complexities and problem areas involved in tax planning. Topics include tax on individuals (including proprietors and partners), corporations and trusts, corporate surplus distributions, international income, appeal procedures, tax planning and tax avoidance versus tax evasion. Prerequisite: FMGT 316. **3 credits**

FMGT 419 Cost and Managerial Accounting 2S - As a follow-up course to FMGT 319, FMGT 419 completes the last portion of the cost accounting courses. See FMGT 401 for details. Prerequisite: FMGT 319. **4 credits**

FMGT 420 Financial Accounting 2S - The follow-up course to FMGT 320, enables students to complete the last portion of the financial accounting course. See FMGT 402 for details. Prerequisite: FMGT 320. **5 credits**

FMGT 441 Financing International Trade - Covers the various financing methods in both import and export situations. Documentation requirements are thoroughly covered. Students become familiar with the operations of foreign exchange markets and methods of financing foreign investments. **6 credits**

HOSP 103 Hospitality Accounting - Flexible entry correspondence course that presents accounting basics with an emphasis on variations specific to the hospitality industry to give an appreciation of fundamental accounting techniques and terminology. Mechanics of accounting, maintenance of accounting records, and preparation of financial statements are stressed to solve the problems of small hospitality enterprise. **3 credits**

HOSP 106 Rooms Management: Front Office Procedures - Flexible entry correspondence course that provides theory and practice for the facilities, equipment, forms and specific techniques used by desk clerks to complete their clerical and interpersonal duties. The course is designed for those interested in the hospitality field or those in other areas of the industry who wish to improve their opportunities for advancement. **3 credits**

HOSP 109 How to Start a Restaurant - Teaches the student the essentials of becoming a food service entrepreneur. Topics include site selection, construction and lease considerations, marketing and financial plans, and franchising. Employee selection, training and evaluation techniques are also covered. **3 credits**

HOSP 112 Customer Relations and Communication Skills - For those in contact with the public including travel clerks, ticket agents, restaurant staff, desk clerks and others serving or anticipating serving the travelling public. Students learn to speak confidently and clearly to customers; use good telephone techniques; deal effectively with a variety of unusual situations; demonstrate and practice good communication skills (attending, listening, responding); and analyze their personal grooming and professional appearance **3 credits**

HOSP 132 Career Exploration for the Hospitality Industry - Discusses career opportunities in hotels, motels, food service operations, resorts and related industries. Training opportunities in B.C. (full-time and part-time), entry requirements into the job market, specific job functions and working conditions, employment and advancement opportunities, preparation of a systematic plan for career decision making. **1.5 credits**

HOSP 135 Bed and Breakfast Business - This is a "how to" course for potential entrepreneurs wishing to use their private homes as accommodations facilities for fun and profit.

HOSP 203 Introduction to Food and Beverage Management - Persons intending to enter the food service industry with management/ownership as a goal are challenged to consider the many facets and multiple pitfalls of this industry. The student studies basic organization of a food enterprise or department; theory and classification of foods; equipment and supplies needed and purveyors available; basic elements of aesthetics and design; the importance of menu, location, plant layout; basic cost controls; setting of objectives; sanitation and storage principles. **3 credits**

HOSP 205 Front Office Procedures - For persons with little or no hotel/motel experience or those employed in hotels/motels, to broaden their employment opportunities. The course offers theoretical and simulated practical training in most aspects of front office operations. Students study the specific functions of the front office department and learn to perform the duties of a front desk clerk in a hotel/motel after a brief period of on-the-job training. Topics include who does what in a hotel/motel, personal requirements of a front desk clerk, reservation systems, dealing with guests, management and fellow employees, effective sales techniques, cash and credit handling, handling emergencies, career opportunities and steps to gaining employment as a desk clerk, communication skills. **3 credits**

HOSP 207 Front Office Equipment Practicum - Enables students to operate a variety of machines and systems used in hotels to develop guest accounts and balance daily night audits. The course demonstrates and allows practise in procedures and transactions relating to posting of credits and debits to accounts, handling city ledger, cash reporting, correcting guest folio errors, dealing with memory capacity machines and hand transcripts. Systems include hand transcript method, NCR 4200 posting

machine and microelectronic machines, . Approximately 27 hours of instructor monitored learning is supplemented by nine hours of self instruction and small group instruction. **1.5 credits**

HOSP 210 Bartending Practices - For those wishing to work in the restaurant industry or to upgrade their bartending skills. The student studies the mixing of drinks and their recipes. Coupled with waiter/waitress training or practical experience, the student may then work in an operation selling alcoholic beverages. The course includes practical experience behind a cocktail bar with emphasis on mixing, glassware, service and knowledge of wines, spirits,beer and liquers. A variety of dates and weekday formats are available. Class size is limited. **1.5 credits**

HOSP 211 Orientation and Techniques for the Executive Housekeeper - An introduction to opportunities in industrial, institutional and hotel housekeeping. Persons employed in related fields wanting career advancement are encouraged to participate. The course is under consideration by the National Executive Housekeepers Association, Inc. for credit toward the NEHA Certificate. Please contact your program consultant for more information. Topics include the definition of housekeeping as applied to hotels, motels, clubs and schools; housekeeping as applied to health-related institutions such as hospitals, nursing homes and places of incarceration; housekeeping as related to office complexes, factories; chemical, pharmaceutical and food organizations, etc.; basic procedures and surfaces to be cleaned; selection of appropriate equipment and supplies; selective and unusual cleaning procedures; cleaning standards and inspection; work measurement and simplification; time/motion study, etc. NEHA examinations and in-class demonstrations may be required for NEHA accreditation. **3 credits**

HOSP 303 Dining Room Service - Introduces persons with limited experience in restaurants to fundamental techniques and prerequisites for successful operation of a quality dining room. Focus is on the supervisory role. With some practical experience, students can assume relevant responsibilities at the junior management level. Topics include staff and other supervisory responsibilities; hiring of personnel, menu terminology, salesmanship, equipment knowledge, table settings and arrangement, proper service techniques, staff scheduling and safety, fundamentals of table-side cooking. A nominal lab fee may be required. **3 credits**

HOSP 306 Bar Management: Lounges and Pubs - Designed for prospective managers and owners of lounge and pub operations, this course discusses techniques for successful and profitable beverage sales operations. Develops and enhances managerial skills for neighbourhood pubs and cocktail lounges in hotels, restaurants and clubs. The course focuses on principles of management, internal controls, supervision of employees and their functions as related to drink production and service, inventory control procedures, liquor costing and sales controls, determining guidelines for purchasing accessories, equipment and supplies, cocktail lists and in-house merchandising ideas. Prerequisite: HOSP 201 or practical experience. **3 credits**

HOSP 307 Understanding Wines 1 - Presents the origins, production, marketing, sensory evaluation and service of domestic and imported wines focusing on wine in restaurants. The student learns to describe the characteristics of popular wines and spirits, their growing and processing; the requirements for storing and handling wines; how to distinguish basic types of wine using acceptable tasting procedures; how to conduct staff training sessions on the merchandising aspects of wines in restaurants, and how to identify elements of spirits and liqueurs. Lectures, film and slide presentations, discussions, field trips, guest presentations, samplings and student projects cover the wine growing process - wine making, geographical and grape differences, government regulations, label terminology, storage and selling techniques, serving procedure and staff training. **3 credits**

HOSP 313 Food and Beverage Control - Discover the fundamentals of food service industry internal control procedures and information systems for food and beverage operations of all types. The course deals particularly with interpretation of information and making appropriate management decisions. Participants should have an aptitude for basic arithmetical calculations. Major control points studied include sales, ordering, purchasing and receiving, storeroom, inventory and production (costing). **5 credits**

HOSP 317 Understanding Wines 2 - This continuation of HOSP 307 covers recent developments in grape growing and commercial wine making, and examines major growing regions in greater depth. Students study grape growing and wine making at the technical level, wine classification systems in France, Australia and California, and the taste characteristics of varietals from major regions. **1.5 credits**

HOSP 357 Marketing and Sales: Accommodation and Food Service - An introduction to basic marketing and sales techniques, emphasizing the hospitality industry. Students evaluate case studies and develop realistic sales program strategies. Course content includes marketing theory; principles of marketing, product cycle, gathering and application of research, interpretation of trends; forecasting; positioning your package for consumer acceptance; applying marketing objectives to the production of sales material, advertising copy and layout; evaluation of media productions, developing an annual promotional budget. Consideration of personal selling and practice in making sales calls are all covered in this course. **3 credits**

HOSP 358 Analyzing Costs and Planning for Restaurants - For owners and managers in the restaurant field who wish to analyze particular cost problems, reduce operating costs and develop effective menus. Class discussions and lectures cover proven cost reduction techniques and areas such as advertising, energy and utilities, product cost and labor service. Students learn the factors that influence the make-up of a menu, such as types of market served, price structure, staffing, physical plant limitations, storage,availability of foods and costing; how to analyze data and compose suitable menus, and understand layout, colour, print-type and manufacture of menus. **3 credits**

HOSP 412 Hospitality Management Accounting - Persons with accounting experience study the specific accounting principles and procedures of hotel and restaurant operations. Students study hotel and restaurant departmental income statements and balance sheets enabling them to interpret and analyze the results. Management tools such as the break-even technique, budgeting and investing are discussed. The course is problem oriented and an understanding of general accounting principles is beneficial. **3 credits**

HOSP 414 Financial Management: Hospitality - Presents practical illustrations for financial decision making. This is the senior course in the finance/accounting area that has direct application to the hotel food service industry. Students learn how to develop financial goals for a company and obtain financing to meet objectives; prepare cash budgets; determine rates of financial return; calculate costs of stock; develop plans for a feasibility study. The course is problem solving in nature, with the instructor available for consultation and practical assistance. Prerequisite: HOSP 412 or FMGT 101 or previous accounting experience. **3 credits**

INTD 100 Interior Design Basic - Introduces students to the many areas of interior design including furniture arrangement, color and lighting. Teaches students how to critically analyze a

space and how to organize and present information, and will serve as a stimulus for generating ideas. **3 credits**

INTD 101 History of Furniture - Covers the history of furniture from ancient Egyptian to the present. Illustrated lectures, discussions, class projects, assignments and field trips introduce students to furniture periods, construction and quality. Some sketching and design work will be included to encourage individual expression. **3 credits**

INTD 102 Interior Design Drafting 1 - Presents aspects of architectural drafting beginning with lettering, equipment awareness and technical vocabulary. Enables students to present plans, elevations, site and plot plans,with correct architectural symbols in presentation. **6 credits**

INTD 104 Marketing - This compact course provides students with the basics to market their skills to the professional and supply industry. The course will instruct students on how to present a portfolio of their work, how to write resumes and how to approach the design industry. Areas of design will be discussed such as residential, commercial, contract, resource, retail. **1.5 credits**

INTD 200 Color and Lighting - Provides students with the basic theories of color mixing and color harmonies to enable them to produce color schemes. A basic knowledge of lighting methods, effects and products will be covered. **3 credits**

INTD 202 Interior Design Drafting 2 - Presents isometric views, shadow and light. Provides training in the presentation of sections through walls, windows, doors and other architectural components. Focuses on the presentation of one and two point perspective. Prerequisite: INTD 102. **6 credits**

INTD 301 Graphic Presentation - Develops the student's ability to present design plans, elevations and perspectives. Subjects include the importance of presentation in the design process, seeing texture graphically, presentation methods in rendering plans, elevations and perspective sketches. Prerequisite: INTD 302 (65% minimum). **3 credits**

INTD 302 Interior Design Drafting 3 - Students study the reflected ceiling plan, organization of its legend and specification, types and characteristics of lighting. Students complete one major assignment combining plans, elevations, sections, perspectives, lighting plans and specifications. Prerequisite: INTD 102,202. **3 credits**

INTD 303 Materials - Examines interior finishing materials for floors, walls, ceilings and windows, and the characteristics of fabrics. **3 credits**

INTD 304 Space Planning 1 - Introduces factors in space planning including zoning and circulation considerations. Topics include social and private areas in the home, kitchens and types of plans and renovations. Prerequisites: INTD 100, 302 (65% minimum). **3 credits**

INTD 305 Detailing and Materials - Acquaints students with the properties, characteristics and uses of materials used for interior construction, custom furnishing and decor. Introduces the methods and techniques used in the preparation of working drawings for interior construction elements, building components, millwork, custom furniture and built-in cabinets. Prerequisite: INTD 100, 302 (65% minimum). Students should bring drafting samples to first class. **3 credits**

INTD 307 Materials - Introduces students to various interior materials including material characteristics , terms, specifications, budget costs and installation methods. Information on a variety of topics will presented including carpets, wood floors, blinds, vinyl/rubber flooring, textiles, wall coverings, ceramics, marble, stone, wood, metals, plastics. The course will provide the student with the start of their own material resource library. **1.5 credits**

INTD 400 Directed Study Project - Students incorporate the material from previous courses in a major project representing a 450 square metre residential and commercial space including planning, color scheme selection, furniture selection, lighting and electrical planning, developing drawings of custom millwork. Graphic presentation is of major importance. Classroom time will be available for advice from various instructors. Prerequisite: all other courses in the Interior Design Certificate Program (65% minimum). **1.5 credits**

INTD 404 Space Planning 2 - Introduces factors in commercial space planning and problem solving using recognized factors. Topics include offices, restaurants and retail stores. Prerequisite: INTD 100 and 304 (65% minimum). **3 credits**

MDIA 099 Photography (Entry Level) - Enables students to select and handle a 35 mm single lens reflex camera and accessories, and understand basic photographic concepts. Persons with an interest and no previous experience in photography are encouraged to enroll in this exploratory course to foster that interest and determine their potential **non credit**

MDIA 101 Photography - For students who wish to know what cameras and accessories to buy and to increase their photographic skills. Combines theoretical instruction with hands-on training. Examines manual and automatic cameras enabling students to make informed decisions when purchasing new/used cameras and accessories. Students are required to supply a 35 mm camera. Discusses film types, care and handling of equipment, composition and design, people and candid photography, creative techniques, flash photography, close-ups, scenic and travel photos and some common tricks of professionals. Students will try to produce final photo images as they were visualized, gain new approaches to photography as an art medium, and apply techniques and equipment used by both amateurs and professionals. **3 credits**

MDIA 102 Audio Production - A study of the techniques involved in audio production for a variety of business uses including audio visual presentations, music recording, commercial and promotional advertising production. **3 credits**

MDIA 104 Graphics Level 1 - Persons with an interest, but no previous experience in graphic art, are encouraged to enroll in this exploratory course to foster that interest and determine their career potential. Introduces layout, design, illustration, printing methods, camera-ready artwork and typography. **3 credits**

MDIA 201 Advanced Photography - Students wishing to be professional or serious amateur photographers will take great strides toward that goal by enrolling in this course and building on Photography - Basic. Upon successful completion, students will be confident in their particular field of photography and will be prepared for advanced level specialty courses and workshops. The course is mostly hands-on and covers photographic problem situations, portrait lighting, night exposures, still life and action photography, specialized lenses and other equipment. Students are required to supply a 35 mm camera. **3 credits**

MDIA 204 Graphics Level 2 - A continuation of MDIA 104. Enables students to develop their graphic art skills. Includes layout, design and mechanical artwork for four-color printing; paper selection, print production, commercial photography, costing and estimating, and a tour of a large printing plant. **3 credits**

MDIA 206 Effective Presentation Techniques - This course consists of two sections. The first half deals with effective and proper grammatic usage; the second half concentrates on effective spoken delivery techniques. Ideal for people who prepare and present spoken material in today's corporate world. **3 credits**

MDIA 207 Corporate Script Writing - How to plan, organize,and execute a video production that will have a positive effect on a company's profit position. **3 credits**

MDIA 301 Commercial Photography - Enables students to set up and manage a commercial studio; select and handle large format cameras and accessories and studio lighting equipment; have a basic understanding of how to market services to prospects and create a working relationship with clients; do a variety of assignments and work from layout. Students will be familiar with professional techniques for developing a powerful personal portfolio. **3 credits**

MDIA 940 Producing Industrial And Educational Videos - Enables students to understand the principles of small format video productions, have a working knowledge of camera handling, operations and controls; lighting, audio, scripting, preproduction, graphics and editing; design and implement an educational/industrial video. **non credit**

MDIA 943 The Video Entrepreneur - This informative workshop will discuss profitable video markets, format choices and equipment, and equipment purchase/rental. **non credit**

MKTG 101 Marketing 1 - An introduction to the marketing environment and marketing institutions. Detailed study of basic marketing functions, marketing research, product planning, selection of trade channels, merchandising, advertising, sales promotion and salesmanship. Includes marketing of consumer as well as industrial goods. **3 credits**

MKTG 102 Introduction to Marketing - This introduction to the marketing environment and marketing institutions includes a detailed study of basic marketing functions, marketing research, product planning, selection of trade channels, merchandising, advertising, sales promotion and salesmanship. Marketing of consumer as well as industrial goods is included. **3 credits**

MKTG 104 Starting a Business - Registration for this course is restricted. Please contact R. Vandermark, Associate Dean, Marketing and Tourism. A telecourse containing twelve modules of independent study using a studies guide, a textbook, and a television series shown on the Knowledge Network. Covers the main issues in becoming an entrepreneur and starting a new venture. Different ways to get into business are examined. The management skills needed to run a small business are explained. **3 credits**

MKTG 107 *Marketing for the Fashion Industry* - A course designed to investigate, develop and implement specific marketing strategies as they relate to the field of fashion. A hands-on look at the world of fashion. **1.5 credits**

MKTG 201 Marketing 2 - A continuation of MKTG 101. See MKTG 101. Prerequisite: MKTG 101. **3 credits**

MKTG 203 Sales Management - General principles of sales management are examined. Emphasizes the selection, assimilation, training and supervision of sales staff. Sales research, planning, organization and analysis, along with computer applications in sales management are also covered. **3 credits**

MKTG 205 Marketing of Services - Covers the development of a marketing mix for companies in service industries. The course will focus on the differences between developing strategies for services rather than products. **1.5 credits**

MKTG 218 Introduction to Media - Through lectures and guest speakers, students will learn about media/industry terminology; strengths and limitations of each medium; industry-related research tools; the role of sales representatives; the role of the computer in the media planning and buying process; the role of the planner/buyer; tips, pitfalls and exceptions within the planning and buying process, and the application of various creative elements within the media mix. This course will appeal to advertising agency and media sales personnel, and individuals considering career entry in the advertising industry. **3 credits**

MKTG 219 Professional Sales 1 - Provides basic training for the sales aspirant or person with no formal sales training. Students will develop selling skills techniques through practical applications in role playing . **3 credits**

MKTG 301 Marketing Planning - Examines how to develop a formal marketing plan including situation analysis, market and competitive conditions research, objective setting and action scheduling, using computer based management systems. Prerequisite: MKTG 100, 200. **3 credits**

MKTG 302 Industrial (Business-to-Business) Marketing - This course will help students to understand the scope and importance of organizational marketing to industry, governments and institutions, and to develop a marketing strategy with emphasis on segmenting the organizational market. Upon completion of this course, students will be able to appreciate the opportunities for marketing products from primary to secondary industry in B.C., and by the same token, to sell goods and services to the producers of primary and secondary products in B.C. **3 credits**

MKTG 309 Marketing Research 1 - Examines the basic approaches to marketing research. It discusses the techniques and tools of this research and relates these tools to the decision-making process. Emphasis is placed on the use of marketing research in the total marketing decision concept. Special applications of marketing research to simulated real-life situations are examined. Prerequisite: MKTG 101, 201. **3 credits**

MKTG 319 Professional Sales 2 - Examines power selling. Students will learn about power phrases, buying signals, buying motivation, getting attention, arousing interest, sales interview process, selling more, selling the end result, art of persuasion, benefits and values versus price. Also covers how to deal with no's, prospecting for sales, selling yourself and your company, generating sales through telephone and follow-up techniques, goal setting and personal motivation. Prerequisite: MKTG 101,102,201. **3 credits**

MKTG 320 Merchandising/Retailing - Analyzes the types of retail operations operating in the marketplace; merchandising techniques and concepts needed to successfully manage the operation. **3 credits**

MKTG 321 Public Relations - For anyone in business, government, municipalities, associations and organizations, responsible for internal and external communication. Students learn to fulfil their information and communication assignments with increased confidence and competence. Topics include planning and executing a public relations program; communication techniques, principles of news writing and preparation of news photographs; utilizing the media; press and community relations; external/internal communications and meetings. Prerequisite: MKTG 101, 102, 201. **3 credits**

MKTG 322 Introduction to Advertising - Advertising philosophy and purpose; organization of the advertising function; relationship of advertising to other business divisions; advertising planning; the business management of advertising. The creative process, research, media - newspaper, radio, TV, magazines, direct mail,

outdoor, public relations. Copy, layout, art, strategies and campaigns, production and communications, controls, evaluating results. The course is designed to make the student a competent advertising critic. Prerequisite: MKTG 101,102, 201. **3 credits**

MKTG 323 Public Speaking and Oral Communication 1 - Emphasizes the development of public speaking skills and the principles of effective oral communication. Topics include communication as it applies to public speaking and the rudiments of improving the speaking voice. Films, buzz groups and closed circuit TV are utilized. Each person is expected to prepare and deliver an oral assignment weekly. **3 credits**

MKTG 324 Small Business Development - Discusses the planning stages involved in starting a new business including market, financial and legal feasibility requirements. Major emphasis is on the preparation of a business plan. **3 credits**

MKTG 325 Importing - Provides students with importing business basics. Discussion covers methods of sourcing overseas suppliers, assessing market potential, payment mechanisms and foreign exchange. Students will learn how to set up their own import businesses. **3 credits**

MKTG 327 Exporting - Provides students with complete information on export business basics. Discusses opportunities, research, planning distribution, promotion and customs practices. Students will learn how to set up their own export businesses. **1.5 credits**

MKTG 328 Principles of Property Management - Lays the foundation for a sound education in property management by presenting the basic theories and techniques of long range and day-to-day investment in real estate management. **3 credits**

MKTG 348 Media Planning and Buying - Emphasis is placed on development and execution of the media plan. Close contact is maintained by students with agency media buyers and other industry factors to ensure a practical direction to the course. Quantitative media planning techniques are evaluated in light of most recent computer applications. The main objective of this course is to provide marketable skills in media planning and buying to qualify students for career entry consideration in advertising agencies. Prerequisite:MKTG101, 201. **3 credits**

MKTG 406 New Product Marketing - A study of effective processes for generating product ideas, design planning, performance evaluation and market testing. Commercialization of highly innovative products is emphasized. Prerequisite: MKTG 301, 304. **3 credits**

MKTG 409 Marketing Research 2 - A continuation of MKTG 309. **3 credits**

MKTG 418 Directed Studies - One day a week of the student's timetable is allocated to carry out a major project. The project will be in a marketing area of the student's choice, carried out under the guidance of assigned faculty members. Prerequisite: ADMN 100, 200; BCOM 207, COMP 120, FMGT 201; MKTG 103, 201 309; OPMT 110, 130. **3 credits**

MKTG 421 Advertising Creative Print - Students with a basic knowledge of advertising and print media planning learn the creative development of graphic art concepts and printed publications. Design layout, typography, printing and their applications to both advertising and general publishing; the fundamentals of effective copywriting and the criteria used to determine effective design, and production processes necessary for transforming rough art concepts into the published form, are studied. Topics are covered through a combination of lectures, demonstrations, workshops and field trips. Prerequisite: MKTG 322, 422. **3 credits**

MKTG 422 Advertising 2 - Clarifies the material covered in MKTG 322 permitting persons holding advertising positions to advance to more responsible areas. The course explains the interrelationship between marketing and advertising. The student studies measuring advertising effectiveness; differences between advertising and sales promotion; media planning and budgets; the makeup of advertising campaigns; how an advertising agency operates; implementing marketing plans, coordination, controls and measurement. Prerequisite: MKTG 323 **3 credits**

MKTG 423 Public Speaking and Oral Communication 2 - Discusses various types of communication breakdown, one-to-one communication and techniques used in briefing business groups. Opportunity is given for improving public speaking skills in the areas of speaking on abstract subjects, the persuasive speech and the dinner speech. Films, buzz groups and closed circuit TV are utilized. Students prepare and deliver an oral assignment most nights. The course concludes with a dinner banquet when the class and invited guests hear each class member speak. (Banquet costs extra.) Prerequisite: MKTG 323. **3 credits**

MKTG 424 Advertising for the Small Firm - Designed for the manager or owner of a small business, this course demonstrates how to make the most of a limited advertising budget. Students gain an understanding of the relationship between marketing and advertising; types, media planning; budgeting; measuring advertising effectiveness; coordination and controls, and advertising agencies. **3 credits**

MKTG 426 Sales Management Computer Applications - Focuses on the use of microcomputers as planning tools to increase productivity. Two software packages, data base management and spreadsheets will be used for this course. Designed to complement the sales management courses, the course will focus on sales forecasting, budgeting, territorial design and sales evaluation. **3 credits**

MKTG 427 Creative Advertising Design - Moves the student from the development of creative strategy through the concept stage to the details of creative execution. Both print and broadcast advertising techniques will be explored with the guidance of professionals who are currently working in a variety of creative advertising areas. The primary objective of the course is to have each student produce high quality creative projects to enhance their portfolios. **3 credits**

MKTG 433 Advanced Public Relations - Emphasizes the behavioral science foundation of public relations, and looks in depth at program planning and budget development; issues identification; analysis and management; crisis management; dealing with specialized public and managing public relations. Prerequisite: MKTG 321 **3 credits**

MKTG 437 Principles of Direct Marketing - Provides information on how to use direct marketing as an effective medium. The course will cover planning direct marketing campaigns and the use of telemarketing as a prime tool in direct marketing strategy. **3 credits**

MKTG 501 Strategic Marketing Management Simulation - Focuses on the computer simulation game "Compete". Students working in teams will utilize skills gained from previous marketing, finance, and planning courses to develop overall marketing strategies built around the marketing mix. **3 credits**

OPMT 099 Mathematics for Business - Upgrades and refreshes the mathematical skills of students who intend to enter the School of Business at BCIT. A suitable prerequisite for the mathematics courses in the School of Business as it meets the Algebra 11 entrance requirement. The course includes arithmetic,

elementary algebra, graphical techniques, ratios and percentages, and the elementary business applications of these concepts. **non credit**

OPMT 102 Basic Mathematics of Finance - Discusses interest and its effects upon business and industry. The student learns to discriminate between common situations, apply necessary analysis and perform appropriate calculations. Topics include simple and compound interest, present values and discounts, annuities, evaluation methods and basic replacement analysis. Prerequisite: basic algebraic skills to at least the Grade 11 level. Others should consider OPMT 099. **3 credits**

OPMT 175 Warehouse Management - Provides a basic understanding of the major factors in managing a warehouse. The key subjects are: receiving, stock location planning, order picking, shipping, time/space management, data processing and loss control. The course also introduces the participant to specific procedures such as inventory accuracy, cycle counts, inventory adjustments and inventory turnover. **3 credits**

OPMT 187 Project Planning and Scheduling - For those who require basic information about the critical path method (CPM) and its application to project management. The course introduces the fundamentals of CPM as used in planning, scheduling, resource allocation and project management. It includes an introduction to planning and scheduling techniques; Gantt charts, arrow diagrams; precedence diagrams; PERT: time/cost relationships; resource allocation; bid determination; project management and the role of the computer. **3 credits**

OPMT 188 Management Information Systems - Students learn to use a managerial systems approach to the management information area; review, assess and evaluate information processing hardware and software; evaluate management needs for information and integrate those needs into the management system; design and implement a simple management information system. The course is not intended to produce highly skilled MIS practitioners, but to provide an understanding of basic MIS concepts. Students learn how to relate to MIS specialists and managers in large organizations and how to approach a MIS problem in a small organization that would not normally have MIS specialists on staff. **3 credits**

OPMT 189 Operations Management - Presents broad interpretation of operations management and details some of the problems faced by different types of enterprises (private and public) in the management of their production systems. The student studies the nature, purpose and processes associated with operations management; the relevance of systems design, resource allocation, operations planning and control to the individual firm; how to identify and solve operational problems using quantitative methods. **4.5 credits**

OPMT 191 Purchasing - Designed for those entering or related to the purchasing field, the course examines the fundamentals, principles and practices of purchasing. Topics include the functions of a purchasing department and its relationship and responsibilities to management; centralized purchasing; negotiating; buying for quality, quantity and price; timing and sources of supply; receiving and warehousing; inventory control. See OPMT 192 for a supporting course in Inventory Planning and Control. **3 credits**

OPMT 192 Inventory Planning and Control - Presents the fundamentals of inventory planning for those preparing to enter the inventory planning field, and for those in related areas that interact with an inventory system including purchasing agents, buyers, maintenance planners, production schedulers, sales managers, warehouse managers, mill storekeepers and parts people. Examines the basic techniques used in the design and control of inventory systems. Topics include forecasting inventory requirements, the ABC classification, material requirements planning, the role of the computer, inventory information flow and control design. Prerequisite: understanding of basic algebra. **3 credits**

OPMT 196 Supervisory Training for Operations Management - Prepares new or aspiring supervisors for leadership and refreshes supervisors' leadership skills. Self analysis, simulated meetings, group work, case studies, research and lectures, teach students the implications of an early assignment to first line supervision; the application of management to organizational problems at the supervisory level; skill in planning, decision making, interpersonal and intergroup relations and communications. **3 credits**

OPMT 197 Statistics for Business and Industry - A comprehensive study of elementary statistical methods as applied to objective decision making. Suitable for persons requiring statistics to initiate market research, audit sampling, control quality, control inventory and forecast business. The course includes an introduction to the use of statistics in business and industry; descriptive statistical techniques - collection and treatment of data; a review of elementary set theory and probability; inferential statistical topics - sampling, estimation, hypothesis testing, goodness of fit, regression analysis, correlation and time series analysis. **4.5 credits**

OPMT 198 Productivity Engineering 1 - A fundamental course in productivity improvement, the course is based on a systematic, scientific approach to problem solving / methods improvement. Selection of study areas involves; economic feasibility, recording techniques, assembly and analysis of data, critical examination, the development and selection of alternative solutions. While the emphasis is on productivity improvement, case materials will explore various applications areas; manufacturing, warehouse, office, materials management and general management engineering. **3 credits**

OPMT 290 Performance Measurement - This is an introductory and applications course to the subject of work measurement. Using the principles of work study, methods study, motion study and various time analysis techniques, the student is well equipped to solve work study problems. Time measurement techniques such as stop watch, M.T.M. (Methods Time Measurement), M.O.S.T. (Maynard Operating Sequence Technique) will be discussed. This course will not license students as work study practitioners but will give them a basic understanding of the principles of work study, work methods and work measurement techniques. **3 credits**

OPMT 291 Project Study: Manufacturing - Allows the student to do a complete study through to the final report by applying the knowledge obtained in OPMT 198 and OPMT 290 to an industrial problem. Prerequisite: OPMT 198, 290. **1.5 credits**

OPMT 292 Facilities Design, Layout and Materials Handling - Presents a systematic procedure for designing layouts and determining alternative material handling systems for production, warehouse and storage settings. Topics covered through case studies and applications include materials handling equipment selection, introduction to material handling time measurement, production scheduling, facilities design and plant layout. Prerequisite: OPMT 198, 290. **3 credits**

OPMT 293 Facility Layout and Material Handling: Office - Presents a systematic procedure for designing layouts and determining alternative material handling systems. Teaches students to do layout planning (both over-all and detailed) for office environments, in conjunction with physical handling of paper equipment

selection and how to solve layout and material handling functional design problems. Prerequisite: OPMT 186,192,199, 295.
3 credits

OPMT 294 Physical Material Handling and Inventory Space Planning - An introduction to sensitivity analysis as it pertains to purchasing, inventory planning and control. The student is introduced to the concepts and techniques required to design and analyze physical space requirements for the storage and handling of products in warehouses, retail and manufacturing facilities. Prerequisite: OPMT 198. **1.5 credits**

OPMT 295 Project Study: Office - Students apply the skills learned in OPMT 186 and 199 to an office problem to make a complete study through to the final report. Prerequisite: OPMT 186,199. **1.5 credits**

OPMT 298 Productivity Engineering 2 - For students with the basics of OPMT 198. OPMT 298 allows the student to complete a more detailed and complex study to final report and presentation in the areas of manufacturing, warehousing and storage. The course will stress and expand upon productivity improvement through systematic scientific problem solving. Prerequisite: OPMT 198. **3 credits**

OPMT 333 Operations Management: Product and Cost Control - This course is designed to encourage students to utilize microcomputers for current situational analysis. It will offer state-of-the-art cost control and cost reduction techniques to facilitate effective business management. **3 credits**

OPMT 334 Operations Management: Computer Inventory Control - This new introductory course is designed for the small business operator requiring the basic principles of inventory planning and control using a microcomputer. **1 credit**

OPMT 411 Production Engineering Management - The course is designed to survey the general background to production management in terms of planning, organization and operations. Major topics include mass, batch and job shop production, economic factors, process planning and control, shop layout, make or buy decisions, purchasing activities, sub-contracting, production control, managing product quality, and human factors in production. Course material will be covered through lectures, labs, assignments and a student team project. **3 credits**

PMAC 100 Principles of Buying - A comprehensive introduction to the basics of purchasing offered throughout Canada as an essential part of the Professional Development Program of the Purchasing Management Association of Canada. Designed for those seriously interested in pursuing a career in materials management, it presents a minimal theoretical background for buyers. Topics include purchasing and materials management for the 1980's, organization and objectives, negotiation, quality and inspection procedures, quantity and inventories, supplier selection, price determination, transportation, value analysis and make or buy, public purchasing, legal aspects, equipment purchasing and disposal. **4.5 credits**

PMAC 200 Principles of Traffic and Transportation - Traffic and transportation are key areas utilized by purchasing personnel. The ability to control transportation costs is increasingly important. The course is designed by the Purchasing Management Association of Canada for buyers, inventory control clerks and people with little or no major exposure to the field. Topics include an appreciation of transportation, organization for transportation, role of the modes of transportation, regulation of transportation, railway industry, railway rates, trucking industry, customs, small shipment services, bills of lading, Canadian freight class, 6000 packaging considerations, materials handling, claims, transportation by water and air and safety in distribution.
4.5 credits

PMAC 300 Principles of Production and Operations Control - The course covers applications in a wide range of organizations including public and non-profit, services, distributors and end-users, processors and manufacturers. Topics include inventory management, inventory functions and classification, replenishment strategies, order quantities, order points, safety stocks, demand forecasting and strategies to reduce inventories (MRP and Just-in-time), capacity management, scheduling and project management. **4.5 credits**

TDMT 101 Geography of Trading - Transportation is the basis of all economic systems including agricultural production, industrial location, settlement patterns, marketing systems and consumer shopping. The course studies in detail the role of transportation, major trading routes and ports and other factors in the development of resources for the world and Canada. Emphasis is placed on Canada as a major resource producer, particularly in the emerging Pacific Rim. **3 credits**

TDMT 202 Transportation Regulations - Familiarizes the student with transportation regulations at federal, provincial and regional levels. The Acts governing intra and inter-provincial transportation, and regulation of common, contract and private carriers, including their rights and responsibilities, and the deregulated U.S. transportation industry. **5 credits**

TDMT 203 Transport Economics - Covers a variety of transportation services and their cost factors including carrying capacity, load factors, fuel cost, etc., concluding with profit oriented rate making. Costing methods relating to various modes of transportation are discussed considering distance, flow of goods and backhaul. **5 credits**

TDMT 409 Exporting and Importing - Practical application of previously learned theories acquaints students with the terminology and interpretation of the Customs Act, customs tariff, excise tax, and Antidumping Act. Gives the student thorough understanding of fair market value, dumping, countervailing duty, the GATT, tariffs and the increasing use of non-tariff barriers including current new devices. Documentation for importing and exporting, entries, drawbacks, refunds, appeals and classification are covered. **4.5 credits**

TDMT 410 Strategic Distribution Management - An overview of the total distribution concept. The course examines distribution facility location analysis, information systems, control systems and distribution economics and profitability. With heavy emphasis on customer services and profitability, the course prepares the student to conduct transportation, customer service and complete distribution audits. **6 credits**

TDMT 413 Traffic and Transportation Management - Details the complexities of the industrial traffic department and the operations departments of a transportation company. The course provides comprehensive practical knowledge required by the shipper and receiver of goods in an industrial setting. Topics include: traffic management, decision making, freight tariffs, provisions used in determining the applicable rate, special and ancillary services, marine cargo insurance, transportation.
4.5 credits

TOUR 212 Basic Communication in Japanese - English speaking persons will develop basic Japanese conversational skills. Persons employed in restaurants, hotels and motels, travel offices, information, customs and government offices, and persons intending to travel to Japan, will benefit greatly from the course. Topics include cultural differences; geographical and historical background; language technique; Hirigana in Roman lettering; food, clothes, souvenirs and items of general interest for Japanese travellers; currency and exchange; dealing with tour guides

and limited English translators; the importance of this language group to tourism in Canada and British Columbia. Practical subjects include basic vocabulary and pronunciation skills; sentence structure; making initial conversational approaches and basic reading, spelling and pronunciation. **3 credits**

TOUR 213 Basic Communication in French - English speaking persons will develop basic French conversational skills. Persons employed in restaurants, information, government and customs offices, will benefit greatly from the course. Topics include cultural differences, geographical and historical background; techniques of speaking the language; how to deal with tour guides and limited English translators; importance of this language group to tourism in Canada and British Columbia. Topics include basic vocabulary and pronunciation; sentence structure; basic reading, spelling and pronunciation and making initial conversational approaches. **3 credits**

TOUR 214 Basic Communication in Spanish - English speaking persons will develop basic Spanish conversational skills. Persons employed in restaurants, hotels and motels, travel offices, information, customs and government offices intending to travel to Spanish speaking areas, will benefit greatly from the course. Topics include cultural differences; geographical and historical background; techniques of speaking; how to deal with tour guides and limited English translators; importance of this language group to tourism in Canada and British Columbia; food; souvenirs and currency differences related to Spanish speaking tourists. Practical subjects include basic vocabulary and pronunciation; sentence structure; making initial conversational approaches; basic reading, spelling and pronunciation. **3 credits**

TOUR 215 Basic Communication in German - English speaking persons will develop German conversational skills. Persons employed in restaurants, hotels and motels, travel offices, information, customs and government offices who intend to travel to German speaking areas, will benefit greatly from this course. Topics include cultural differences, geographical and historical background; techniques of speaking; how to deal with tour guides and limited English translators, importance of this language group to tourism in Canada and British Columbia; food, souvenirs and currency differences related to German speaking tourists. Practical subjects include basic vocabulary and pronunciation, sentence structure, making initial conversational approaches , basic reading, spelling and pronunciation. **3 credits**

TOUR 230 Travel and Tourism: Introduction - For persons who are engaged in, or who anticipate employment in this industry. Students study industry components, major organizational relationships and jobs and careers available within them emphasizing entry-level positions; travel agent, tour wholesaler, passenger agent, sales and reservations areas; Tourism British Columbia's role and organization. Includes discussion of the social and economic effects of tourism, marketing and the role of tour operators and travel agents. **4.5 credits**

TOUR 240 Tourism Geography - Designed for persons wishing to enter the travel and tourism industry as travel counsellors or travel agents and those who are interested in travel destinations. Students study those countries where tourism is a significant part of the economy, and develop a good knowledge of tourism geography. Topics include geographic location, tourism regions, climate, population, culture, language, natural and man-made tourist resources, currency and transportation. Major tourism destinations are selected from North, Central and South America, Europe, Asia, the South Pacific and the Far East. **3 credits**

TOUR 241 Tourism: Europe - Discusses historical and practical tourist related aspects of Continental Europe and the United Kingdom including practical hints for the travel counsellor. The course covers Great Britain, Germany, France, the Netherlands, Italy, Spain, Eire, Austria and Switzerland, including history geography, cultural climate, economic and educational standards of the area. Research and home study is required. **1.5 credits**

TOUR 243 Tourism: Pacific Rim - Acquaints students with historical and practical aspects of Pacific Rim countries as seen through the eyes of a tourist. Practical hints will help both the traveller and travel counsellor. The course examines the background and current conditions in Japan, Thailand, Malaysia, Hong Kong, Indonesia and the Philippines including historical and geographical knowledge of the areas: cultural and economic conditions, climate, industry, educational standards, etc., as well as places of particular interest to the visitor. Research and home study is required. **1.5 credits**

TOUR 244 Tourism: South Pacific - Acquaints students with the historical and practical tourist related aspects of the South Pacific now well frequented by Western Canadians. Practical hints for the travel counsellor and traveller familiarize students with the sights, sounds and living conditions in these lands. The course covers the countries and/or areas of Hawaii, Fiji, Tahiti, the Samoan Islands, New Zealand and Australia including historical and geographical knowledge of the areas; cultural, social and economic conditions; industry; educational standards; etc., as well as places of particular interest to the visitor. Research is required. Slides, 16 mm film, mini-lectures and class discussion illustrate the course. **1.5 credits**

TOUR 250 Travel Agency and Tour Operations: An Introduction - A framework for students considering working in the travel counselling and tour arranging field, to be completed before or in conjunction with HOSP 350. Topics include hotel terminology, classifications and bookings; cruise and tour bookings, marketing of tours and product comparisons. Basic functions of travel agencies are covered. **1.5 credits**

TOUR 251 Tour Managing, Escorting and Guiding - For those who enjoy working with tourists, and who want to become professional tour managers or local "sightseeing" guides. This very practical course concentrates on how to supervise and conduct an escorted tour (domestic/international) and on the roles and responsibilities of the tour manager and local guide. Topics include meeting, escorting and looking after tour participants; dealing with emergencies and tourist complaints; sightseeing procedures; care of baggage, airport/hotel procedures; personal demeanor and dress. **1.5 credits**

TOUR 350 Domestic Air - Working with the official North American Passenger Tariff and the Official Airline Guide, students study the fundamentals of domestic (within Canada and the U.S.A.) passenger air travel. The course includes the construction of normal and special fares, terminology, schedules, ticketing procedures, etc., related to today's world of travel. Approximately 3-5 hours per week of home study is required. Note: a deposit is required on the second night of class for tariff and schedule books. 50% is refundable upon return of the materials to the course instructor. On no account can the tariff materials be retained by the student. **3 credits**

TOUR 351 International Air 1 - Provides instruction in Transatlantic and Transpacific passenger rules, regulations and fares. Familiarizes students with the terminology and fundamentals of Transatlantic and Transpacific fare construction and enables them, under supervision, to handle all facets of these air travel sales for travel agencies and carrier ticket offices. Topics include the Air Tariff Book 1 general rules; fare construction rules (fare construction units, the mileage system, HIPs, backhauls, etc.); normal and special fare rules for fare types which are generally saleable from Canada. Lectures and prescribed itineraries will be

used. Approximately 2-6 hours per week of home study is required. Ticketing is limited to discussions of specific ticket entries. Note: a deposit will be required on the first night of classes for tariff and schedule books. 50% is refundable upon return of the materials to the course instructor. On no account may the tariff materials be retained by the student. Prerequisite: previous direct sales experience in the industry, or completion of HOSP 350. **3 credits**

TOUR 352 International Air 2 - Detailed instruction on worldwide passenger rules, regulations and fares for persons who have completed HOSP 351 and who are involved in direct passenger sales. Topics include the terminology and fundamentals of worldwide fare construction and currency regulations as related to PTA's (fare and equivalent fare paid procedures); rerouting (fares, additional collections/refunds); air tariffs; fare construction and rerouting for fare types which are generally saleable to, from or via Canada and also wholly within TC1. Approximately 3-6 hours per week of home study is required. Applicants must have a sound knowledge of basic fare construction principles for journeys originating in TC1. Note: a deposit is required on the first night of classes for tariff and schedule books. 50% is refundable upon return of the materials to the course instructor. On no account may the tariff materials be retained by the student. Prerequisite: completion of HOSP 351 or related work experience. **3 credits**

TOUR 353 Automated Reservations - Persons who have completed TOUR 351/352 or have one year of experience in the air travel industry and are familiar with city codes, terminology, etc., will learn to activate a reservations computer terminal as installed in many travel agency offices and to perform all functions relative to booking airline reservations, tours, hotels / car rentals. Although not mandatory, basic typing skills are beneficial. A precourse booklet is supplied to each student to provide basic knowledge of the computer system. The course consists of "hands-on" training in the use of a CRT terminal. The building, queueing, changing and cancelling of PNR's (Passenger Name Records), automated hotel bookings, car rental and tour reservations and the relevant transactions are explained and practised. Enrolment is limited to 8 students. **3 credits**

TOUR 355 Automated Ticketing - A two-weekend course for persons fully conversant with the operation of reservation computer terminals as installed in many travel agency offices, and those who have successfully completed HOSP 353. Students learn to activate a ticket printer linked to a reservations computer terminal and to perform all functions necessary to produce a computer generated ticket. The course consists of "hands-on" training in producing computer generated tickets, both computer and manually priced. All transactions are explained and instruction in loading, changing and minor trouble-shooting of a ticket printer is given. Prerequisite: students should be fully conversant with IATA ticketing procedures (Domestic Air and International Air), and have at least two years in the industry working international itineraries. **1.5 credits**

COOPERATIVE ASSOCIATION PROGRAMS AND CERTIFICATES

CANADIAN ASSOCIATION FOR PRODUCTION AND INVENTORY CONTROL (CAPIC)

The Canadian Association for Production and Inventory Control (CAPIC) is a professional group of men and women who practice the art and science of production and inventory management.

CAPIC is Region VIII of APICS, one of the fastest growing professional societies . The society currently has more than 62,000 members in 248 chapters and 119 student chapters in United States, Mexico, Puerto Rico and Canada. More than seventeen international affiliates and licensees complement APICS membership. It's ranks include professionals in positions ranging from material handlers to corporate vice presidents.

CAPIC is organized and operated exclusively for research and educational purposes. Its primary objectives are to develop and promote educational programs and to assist members and non-members in keeping abreast of the latest techniques and systems in the profession of Production and Inventory Management.

The Vancouver CAPIC chapter in association with BCIT provides a series of seven courses. These courses utilize the Applied Manufacturing Education Series (AMES) that address the day-to-day challenges confronting master schedulers, production planners, factory supervisors and other "hands-on" employees involved with the manufacturing and distribution process.

In establishing operations as a recognized profession, APICS formed the curricula and certification council to define the APICS body of knowledge and to develop a voluntary certification program. More than 25,000 people a year test their knowledge in Inventory Management, Production Activity Control, Capacity Management, Materials Requirements Planning, Master Planning and Just-In-Time Production.

Those who take the CAPIC courses at BCIT and successfully pass the final exams can obtain credits in the BCIT Operations Management program and can become Certified by APICS in Production and Inventory management (CPIM).

For further information on CAPIC contact:

Steve Dudra, CAPIC Director of Education
BCIT,Operations Management Program
3700 Willingdon Avenue,
Burnaby, B.C. V5G 3H2
Telephone: 434-5734, Local 5746

CANADIAN CREDIT UNION INSTITUTE FELLOWS' PROGRAM (CCUI)

The Canadian Credit Union Institute Fellows' Program was developed under the sponsorship of the Canadian Co-operative Credit Society with the support of its member leagues and centrals. The program is managed and administered by the Co-operative College of Canada.

The need for developing people within the credit union system has been recognized as a high priority. The CCUI program provides an opportunity for credit union personnel to undertake a formal program designed to upgrade their knowledge and skills.

The CCUI program is a post-secondary level course of studies selected to provide students with a broad education in the theories, concepts and practices of all aspects of financial and business management.

Major commitment of time and energy, and a measure of self-discipline, will be required of people who select the CCUI program as their program of professional development.

Further information can be obtained by contacting the CCUI Co-ordinator, Education Department, B.C. Central Credit Union, 1441 Creekside Drive, Vancouver, B.C. V6J 4S7. Telephone: 734-2511.

The following courses have been accepted for transfer credit:

CCUI Required Courses	BCIT Part-time Studies	
Accounting	FMGT 101	Accounting 1 or
	FMGT 113	Intro to Accounting 1
Business Administration	ADMN 110	Management Fundamentals
Economics	ADMN 100	Microeconomics
	ADMN 200	Macroeconomics
Marketing	MKTG 101	Marketing 1 or
	MKTG 102	Intro to Marketing
Business Strategy or	ADMN 300	Management Policy
	ADMN 428	Management Simulations 1
APPROVED OPTIONS:		
Business Law	ADMN 380	Business Law 1
	ADMN 480	Business Law 2
Business Finance	FMGT 307	Finance 1
	FMGT 404	Finance 2
Management of Accounting	FMGT 109	Acctg. for the Manager 1 or
	FMGT 301	Cost & Managerial Acctg. 1
	FMGT 305	Cost Acctg.- Computer Systems
Management Information Systems	OPMT 188	Mgmt Information Systems
Taxation	FMGT 316	Taxation 1
	FMGT 408	Taxation 2
Employee Relations	ADMN 332	Labor Relations 1
Organizational Behavior	ADMN 222	Organizational Behavior 1
Personnel Management	ADMN 204	Personnel Management
Supervisory Skills	ADMN 124	Supervisory Skills
Promotion Management	MKTG 321	Public Relations (half credit)
	MKTG 322	Advertising 1 (half credit)
Business Statistics	OPMT 197	Stats for Business & Industry
Computer Concepts	COMP 101	Data Processing - Intro or
	COMP 103	Intro to Data Processing - Apple Computers or
	COMP 105	Introduction to Data Processing - IBM PC
Operations Research	OPMT 296	Mathematics for Management

For further information on the CCUI Program, contact: Verna Wong, CCUI Co-ordinator, Training & Development Department, B.C. Central Credit Union, 1441 Creekside Drive, Vancouver, B.C. V6J 4S7. Telephone: 734-2511

THE CERTIFIED GENERAL ACCOUNTANTS ASSOCIATION OF BRITISH COLUMBIA

The Certified General Accountants Association of British Columbia is the largest professional accounting association in B.C. with over 6,000 members and students. The association offers a program of studies leading to the professional designation "Certified General Accountant" (CGA).

The Association recognizes BCIT (full-time and part-time) courses having content substantially similar to courses in the CGA program. Students who obtain a grade of 65% or better at BCIT will be granted credit for such courses towards the completion of the CGA program.

The following courses have been accepted for transfer credit:

CGA Courses	BCIT Part-time Studies
Accounting 101 (Accelerated)	FMGT 115 & 215 or FMGT 101/201 or FMGT 116
Economics 104	ADMN 100/200
Law 108	ADMN 380/480
Statistics 203	OPMT 197
Accounting 211/222 (Accelerated)	FMGT 302/402 or FMGT 314
Accounting 311	FMGT 301/401 or FMGT 319/419
Finance 316	FMGT 307/404
I.C.S. 325	COMP 100/104
Public Speaking	MKTG 323
Business Writing	COMM 160 or COMM 175

Students are advised to obtain a copy of the CGA exemption policy, annually, to ensure they complete the correct courses and do not overlook revisions.

Students who wish to present courses other than those listed above should consult the Association. Applications for registration must meet all association requirements to be accepted in the CGA program.

Students attending BCIT full-time or part-time may register with the Association as an "Associate Student" to receive the National CGA Magazine, provincial newsletter and details about professional development seminars.

For further information about exemptions, the Association, or "Associate Student" membership, please contact: The Director of Admissions, The Certified General Accountants Association of B.C., 1555 West 8th Avenue, Vancouver, B.C., V6J 1T5.

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF BRITISH COLUMBIA

The Institute of Chartered Accountants of British Columbia has advised

BCIT that it will accept certain courses as meeting its course requirements, providing a student meets its prerequisites and is acceptable to the Institute of Chartered Accountants of B.C.

The following table details suitable courses, subject to change without notice.

ICABC	BCIT Part-time Studies
Introductory Financial Accounting	FMGT 101 & 201 or FMGT 110 or FMGT 115 & 215
Intermediate Financial Accounting	FMGT 302 & 402 or FMGT 314 or FMGT 320 & 420
Introductory Management Accounting	FMGT 301 or FMGT 319
Cost Accounting	FMGT 401 or 419
Business Finance	FMGT 307 & 404
Business Computers	COMP 100 & 104
Management Information Systems	COMP 160 & 260 or OPMT 186 & 188
Commercial Law	ADMN 380
Mathematics	OPMT 296 or 315
Probability and Statistics	OPMT 130 or 197
Economics	ADMN 100 & 200
Organizational Behavior/Policy	ADMN 222
Introductory Taxation	FMGT 316 & 408

BCIT does not offer an Advanced Financial Accounting Course.

Students who are interested in the Institute of Chartered Accountants of British Columbia should contact: The Registrar, 1133 Melville Street, Vancouver, B.C. V6E 4E5. Telephone 681-3264.

THE INSTITUTE OF CHARTERED SECRETARIES AND ADMINISTRATORS (ICSA)

The Institute of Chartered Secretaries and Administrators (ICSA) is the leading professional body of administrative executives recognized in the English speaking world, with a global membership of over 50,000.

Members hold positions such as Chief Administrative Officer, Provincial Deputy Minister, Chief Executive Officer or Secretary of corporations/companies and other major public or private bodies.

BCIT is pleased to co-operate with this successful management oriented organization by enrolling students in a program leading to BCIT certification and, subsequently, through completion of further CSA directed studies, to attain a worthwhile professional designation.

There are two levels of membership. Associate and Fellow Members are entitled to describe themselves as Chartered Secretaries and to use the designation ACIS or FCIS. To qualify as a member, it is mandatory to pass prescribed examinations, to have appropriate practical experience and to be acceptable to ICSA.

> Note: Although BCIT courses are considered equivalent to ICSA courses of study according to the schedule on this brochure, ICSA exams must be written on all Module A, B, C and D subjects.

Suitable courses for the ICSA Business/Federal/Provincial/Municipal Programs are as follows:

Management Concepts (All Programs)

1.	Principles of Economics	ADMN 380
3.	Principles of Administration	ADMN 110/211
4.	Principles of Accounting	FMGT 101/201
5.	Communication	COMM 160
6.	Statistics	OPMT 197

Business Administration Program

Module A (both subjects to be passed)

A1	Financial Management Accounting	FMGT 301/302
A2	Corporation Law	ICSA

Module B (two subjects to be passed)

B1	Law for the Administrator	ADMN 480
B2	Taxation	FMGT 316/408
B3	Business Finance	FMGT 307/404

Module C (two subjects to be passed)

C2	Management of Human Resources	ADMN 222/322
C3	Canadian Economic Problems and Policies	ICSA
14.	Computer Systems for Management Information	COMP 101/104

Module D (both subjects to be passed)

D1	Meetings - Law and Procedure	ICSA
D2	Corporate Secretarial Practice	ICSA

Federal/Provincial Government Program

Module A (both subjects to be passed)

A1	Financial Management and Accounting	FMGT 302/402
A3	Public Finance	-

Module B (two subjects to be passed)

B1	Law for the Administrator	ADMN 480
B4	Canadian Government	-
B5	Canadian Public Administration	ICSA

Module C (two subjects to be passed)

C2	Management of Human Resources	ADMN 222/322
C3	Economic Policies and Problems	ADMN 200

Module D (both subjects to be passed)

D1	Meetings - Law and Procedure	ICSA
D2	Corporate Secretarial Practice	ICSA

Municipal and Other Local Government Programs

Module A (both subjects to be passed)

A4	Local Government Finance Accounting	ICSA
A5	Law of Local Government	ADMN 208

Module B (two subjects to be passed)

B4	Canadian Government	
B5	Canadian Public Administration	ICSA
B6	Law of Local Government 2	ADMN 208

Module C (two subjects to be passed)

C2	Management of Human Resources	ADMN 222/322
C3	Economic Policies and Problems	ADMN 200

Module D (both subjects to be passed)

D3	Municipal Government Meetings	ICSA
D4	Municipal Secretarial Practice	ICSA

Note for Mature Students with Appropriate Qualifications: ICSA will be offering a "Professional Administrator" designation, subject to individual requirements.

ICSA: these programs are presently only available directly through ICSA National Head Office.

Students who want additional information on the ICSA program should contact: The Institute of Chartered Secretaries and Administrators, Suite #1 - 650 Clyde Avenue, West Vancouver, B.C. V7T 1E2. Telephone: 922-0535.

THE MUNICIPAL ADMINISTRATION EDUCATION COUNCIL OF B.C.

The Municipal Administration Education Council is authorized by resolution of the Municipal Officers' Association of British Columbia and its membership to include six representatives from the Municipal Officers' Association, one representative from the Union of British Columbia Municipalities, one representative from the Board of Examiners and one representative from the Ministry of Municipal Affairs.

The members of the Municipal Administration Education Council also form an Advisory Council to the Board of Examiners to advise on the qualifications requisite to the granting of certificates; the sufficiency of courses of instruction provided by professional and other organizations; equivalencies between existing courses of instruction; the adequacy of various seminars, workshops and orientation courses, and the dissemination of public information formulated for the purpose of encouraging suitable persons to train for careers in municipal service.

The Board of Examiners is established under the Municipal Act and its main function is the granting of certificates of proficiency in the areas of administration and finance to persons in municipal employment. Requirements for certification are the attainment of a recognized level of academic qualification together with the appropriate amount of work experience in the local government field.

BCIT is recognized by the Board of Examiners as one of the educational institutions offering courses and certificates which meet the academic qualifications required for certification.

Course requirements for a Business Certificate in Public Administration are detailed in the Certificate Program section of this calendar.

For further information contact Sandra M. Allen, Administration/ Education Officer, Municipal Officers' Association of B.C., Suite 100-800 Douglas Street, Victoria, B.C. V8W 2B7 or telephone 383-7032.

PURCHASING MANAGEMENT ASSOCIATION OF CANADA (PMAC)

The Purchasing Management Association of Canada offers a variety of activities and services to purchasing personnel, those interested in entering this challenging profession and those in associated areas.

One activity is the widely recognized professional development program designed to meet the changing demands of the business world and to expand knowledge and career development opportunities within the materials management field. Its focus is on purchasing management, but it encompasses both the fundamentals of the supply field and general management.

BCIT co-operates with PMAC in presenting the Principles courses and offering the following approved courses. A bursary will be given to the top student in each of the three "Principles Courses" in the Lower Mainland area. The bursary is the value of the next part-time studies course or one-day seminar. It is conditional upon being used in the following year and students must be continuing their studies in the PMAC - Professional Development Program.

The following steps are required to achieve the Professional Purchaser Diploma.

PMA Courses	BCIT Part-time Studies
Registration with PMAC	
Principles of Buying	PMAC 100
Principles of Production and Operations Control	PMAC 300
Principles of Traffic and Transportation	PMAC 200
Core Management Courses	MKTG 101
Marketing	MKTG 201
Organizational Behavior 1	ADMN 222
Organizational Behavior 2	ADMN 322
Accounting	FMGT 101
or Accounting 2	FMGT 103
Elective Management Courses (Choose 3 from 9 courses listed)	
Business Finance	FMGT 307 and FMGT 404
Operations Management	OPMT 189
Managerial Styles	ADMN 301
or Discussion Leadership	ADMN 125
or Problem Solving and Decision Making	ADMN 302
Economics 2 - Macro	ADMN 200
Accounting 2	FMGT 201
or Accounting 2S	FMGT 213
Business Law 1	ADMN 380
Data Processing - Introduction	COMP 100
Introduction to Data Processing - Microcomputers (Apple)	COMP 103
or Introduction to Data Processing - Microcomputers (IBM)	COMP 105

Students are advised to obtain a copy of the current Purchasing Management Association of Canada Professional Development Program annually to ensure they complete the correct courses and do not overlook any course revisions.

Students enrolled in previous programs must follow the course requirements of the program in which they are registered. Contact the P.M.A.C. - Professional Development Committee for clarification to ensure enrolment in the correct courses.

For information on Purchasing Management Association of Canada telephone (604) 879-7325 or write to: Chairman, Professional Development, Purchasing Management Association of Canada, 206-640 West Broadway, Vancouver, B.C., V5Z 1G4. Purchasing Management Association of Canada information is also available from Dennis Bidin: 663-2570.

AMERICAN SOCIETY FOR QUALITY CONTROL CERTIFICATION PROGRAM (ASQC)

The Certification Program offered by the American Society for Quality Control (ASQC) provides a means of obtaining specialized qualifications for those who work in the field of quality control.

Since there is no equivalent Canadian Society, the ASQC qualifications are continually gaining recognition among Canadian quality program managers, and many people across Canada have written the ASCQ certification examinations since 1970. The program, revised in 1985, now covers the following:

Quality Engineer Certification
Quality Engineer-in-Training Certification
Reliability Engineer Certification
Quality Technician Certification
Mechanical Inspector Certification

Courses offered currently at BCIT through the Operations Management Technology are:

OPMT 193 Quality Control Methods 1
OPMT 194 Quality Control Methods 2

These courses are endorsed by the local section of the ASQC and will help applicants prepare for the Quality Engineer/Technician/Inspector certification examinations.

For further information contact:

John Lloyd, Vancouver ASQC Education Chairman,
Operations Management Technology, BCIT,
3700 Willingdon Avenue, Burnaby, B.C. V5G 3H2
Telephone: 434-5734, local 5225

THE SOCIETY OF MANAGEMENT ACCOUNTANTS OF BRITISH COLUMBIA (RIA)

The Society of Management Accountants of British Columbia has advised BCIT that it will accept certain BCIT courses as meeting its course requirements, providing a student meets the other prerequisites and requirements and is acceptable to the Society of Management Accountants.

Students interested in the Society's 8 programs should contact the Society at (604) 687-5891, or write to them at 1575 - 650 West Georgia Street, Vancouver, B.C. V6B 4W7.

Exemption Policy For British Columbia Institute Of Technology

In order to be eligible for complete course and exam exemption in any RIA subject listed below, students must have obtained a minimum mark of 65% or equivalent in the required subject(s).

The following courses have been accepted for transfer credit:

RIA Courses (CMA in the rest of Canada)		BCIT Part-time Studies

ACCOUNTING TECHNOLOGIST PROGRAM

RIA		BCIT Part-time Studies
111	Introductory Accounting	FMGT 101/201 or FMGT 115/215 FMGT 116
122	Commercial Law	ADMN 380/480
123	Organizational Behavior	ADMN 222 /332
212	Economics	ADMN 100/200
214	Computerized Information Systems	COMP 104/(101 or 102 or 103 or 105)
229	Intermediate Accounting 1	FMGT 302 or 314 or 320
241	Management Accounting 1	FMGT 301/401 or FMGT 319/419 or FMGT 321 AND COMM 160/170)
324	Taxation	FMGT 316/408
332	Quantitative Methods	OPMT 197
339	Intermediate Accounting II	FMGT 402 or FMGT 420 or FMGT 314
341	Management Accounting II	(FMGT 301/401 or FMGT 319/419 or FMGT 321) AND COMM 160/170

PROFESSIONAL PROGRAM

441	Management Accounting III	No exemption
442	Financial Management	FMGT 307/404
451	Accounting Information Systems	No exemption
452	Internal Auditing	No exemption
541	Management Accounting IV	No exemption
543	Advanced Financial Accounting	No exemption
553	Management: Processes & Problems	No exemption

The Institute is concerned with upgrading and updating professional competence in all areas of activities carried on within the trust industry.

Comprehensive descriptions of educational programs leading to accreditation in various specialities within the industry are available in the calendar of the Trust Companies Institute of Canada.

The Institute will recognize Part-time Studies courses offered at BCIT but candidates are encouraged to work with an institute representative to select an appropriate program of courses.

A Business Education Certificate is available through the Trust Companies Institute. Candidates may begin by registering their intent to participate in the program with the Institute. The registration form must be accompanied by a $25.00 processing fee.

Candidates who have completed post-secondary education may be eligible for advanced standing in the program.

Candidates may enrol in courses that are recognized by the Institute and offered by an approved community college or university.

Candidates who have completed the program requirements may make a formal application for accreditation. The application form must be accompanied by a $25.00 processing fee for registered candidates.

The following courses have been accepted for transfer credit:

Trust Companies	BCIT equivalents
Institute Subjects - Compulsory Subjects	
Principles of Accounting	FMGT 109 FMGT 101
Business Communications	COMM 160 COMM 170 COMM 181 COMM 183
Interpersonal Communication	MKTG 323/423
Business Law	ADMN 380/480
Principles of Economics	ADMN 100/200
OPTIONAL SUBJECTS	
Money and Banking	Not presently available

CANADIAN INSTITUTE OF MANAGEMENT (CIM) CERTIFICATE PROGRAM IN MANAGEMENT AND ADMINISTRATION

The Canadian Institute of Management is a non-profit association dedicated to professional development and the enhancement of managerial skills in Canada. Effective September 1983, the Vancouver Branch of the Institute accepts the following BCIT courses for credit in the C.I.M. Four Year Certificate Program of Studies.

CIM Courses	BCIT Part-time Studies
Year 1	
Management Principles and Practises	ADMN 110/211/212
Communications	COMM 160
Year 2	
Canadian Business Law	ADMN 380
Managerial Process and Organizational Behavior	ADMN 222
Year 3	
Marketing Management Option	ADMN 204/304/ 302/332 COMP 101 MKTG 101,102
Managerial Accounting	FMGT 201/307/314
Year 4	
Managerial Finance	offered through CIM only
Policy and Administration	offered through CIM only

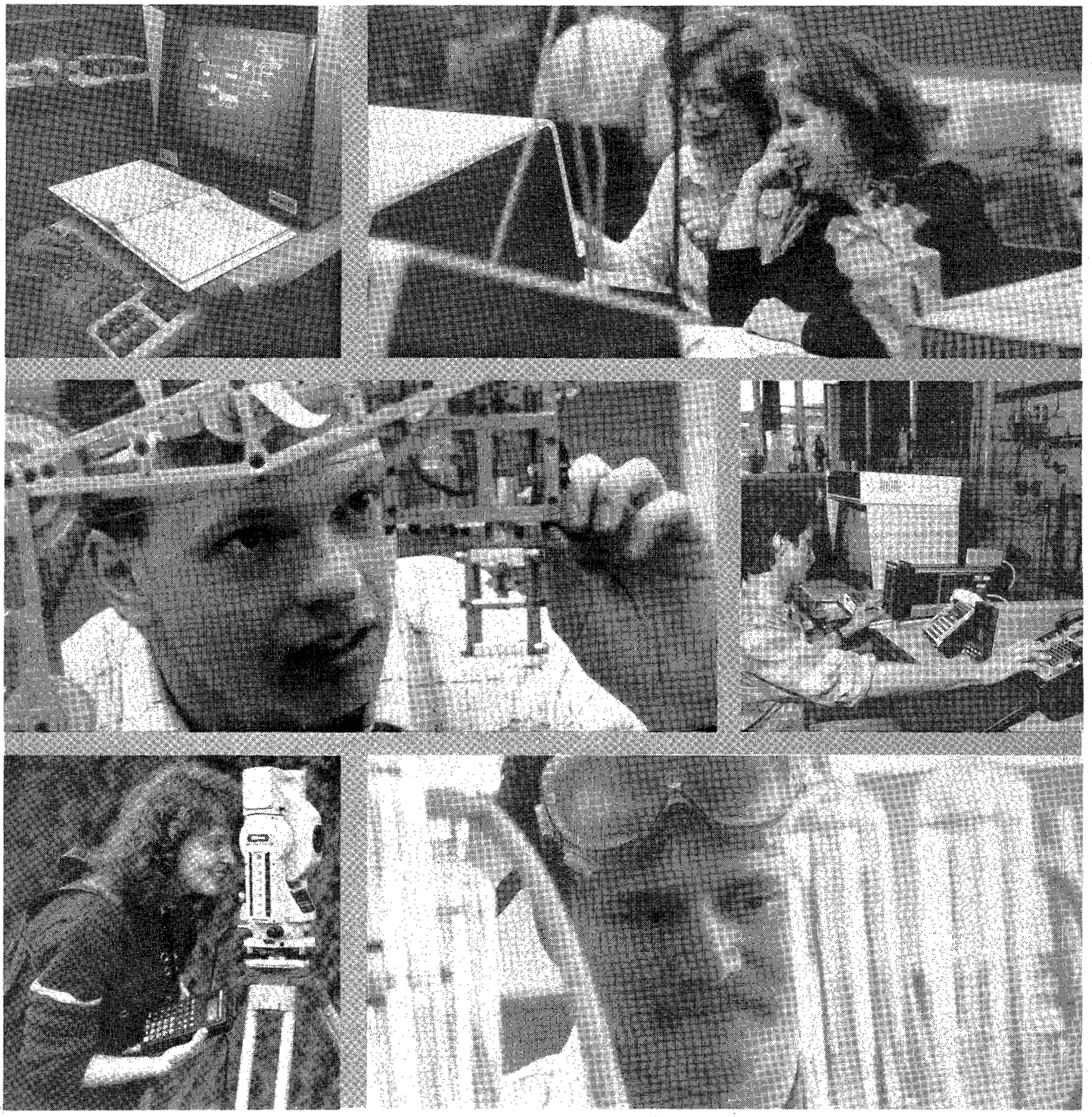
For information on the Certificate Program, write to the Canadian Institute of Management, 600-890 West Pender Street, Vancouver, B.C. V6C 1J9 or call 669-2977.

CANADIAN ADMINISTRATIVE HOUSEKEEPERS ASSOCIATION (C.A.H.A.)

C.A.H.A. is an accredited Canadian professional association of persons employed in the field of Housekeeping Management. Students who are interested in the C.A.H.A., may contact Lea Buburuz, the Education Director of C.A.H.A., at 660-5610.

C.A.H.A. will accept BCIT Part-time Studies courses for transfer credit to their educational program. BCIT courses are 36 hours in duration and it is recognized that these equal the 30 study hours requirements of C.A.H.A. The following courses have been accepted.

C.A.H.A. Requirement	BCIT Part-time Studies
Mandatory Courses	
Sociology	ADMN 222 Organizational Behavior 1
Psychology	ADMN 322 Organizational Behavior 2
Economics	ADMN 100 Microeconomics
Labor Relations	ADMN 332 Labor Relations 1
Personnel Management	ADMN 204 Personnel Management
Microbiology/Sanitation	C.A.H.A.
Interior Planning/Design	INTD 100 Interior Design Basic
Safety/Accident Prevention	ADMN 128 Occupational Safety and Health
Supervisory Skills	ADMN 124 Supervisory Skills
Organization Planning	ADMN 110 Management 1
Teaching Techniques	ADMN 127 Training Techniques
Business Law	ADMN 380 Business Law 1
Purchasing	OPMT 191 Purchasing
Accounting	FMGT 109 Accounting for the Manager
Small Business Management	MKTG 306 Small Business Management
Pest Control	EHCE 902 Basic Pest Control within Buildings or Local Pest Authority
Laundry/Linen	C.A.I.L.M.
Management Materials	OPMT 292 Facility Layout and Materials
Five electives are required by C.A.H.A. for certification. Choose from the list below:	
Communications	COMM 160 Business and Technical Correspondence COMM 170 Business Correspondence or
(CHOOSE ONE)	COMM 171 Business ReportWriting or COMM 180 Technical Correspondence or COMM 183 Technical Reports
Interview Techniques	ADMN 205 Selection Interviewing
Counselling Skills	ADMN 201 Counselling 1
Computer Fundamentals	ADMN 940 Basic Operating Skills
Quality Assurance Programming	C.A.H.A.
Quality Control Methods	OPMT 193 Quality Control Methods 1
Equipment Maintenance Design	C.A.H.A. Seminars / Other Approved Related Employment Course or C.A.H.A.



School of Engineering Technology

Faculty and Staff

Brian Gillespie, B.Sc., M.Sc., Ph.D., Dean

Marv Woolley, Dipl.T., A.Sc.T., Acting Director
Program Advisor
Sharon Cameron, Clerical Assistant
Bette Bayley, Program Assistant

Engineering Technology Part-time Studies

Class Times

Classes for part-time studies courses are generally scheduled for three hours, one night a week or on Saturdays.

Class times for part-time evening technology courses are 18:45 to 21:45 (6:45 to 9:45 pm).

ALWAYS CHECK AT TIME OF REGISTRATION FOR CURRENT CLASS SCHEDULES

Correspondence-Directed Study Courses

Many credit courses offered by School of Engineering Technology Part-time Studies are available as correspondence courses.

Some have been developed specifically for the Transportation Systems (Highways) Diploma program requirements. Furthermore, several of these courses are accredited to other Technology programs. For more information and course descriptions, please refer to the Transportation Systems (Highways) Diploma program in this calendar.

A wide range of courses in **Forest Technology** is presently undergoing review and updating.

For further details on any of the School of Engineering Technology Part-time Studies correspondence courses please contact: Shari Monsma, Program Assistant, telephone: 432-8784.

For details of correspondence courses in Math, Physics and Chemistry contact: Academic Support, telephone: 432-8234.

Industry Services: Customized Programs, Consulting and Development Services

Marv Woolley, Acting Director
Part-time Studies
Telephone: 432-8261

Industry Services provides another training option for your business organization. The School of Engineering Technology Part-time Studies has skilled, professionals available to train your staff - here, or on your premises.

We will work together with you to develop a training strategy that will fill your requirements. In addition, the resources available at BCIT will provide a comprehensive range of training.

All the courses in this calendar contain material which can be adapted for presentation at the required level. With the rapid implementation of new technologies in our workplace, it is more important than ever that companies use local resources that are easily accessible to train their personnel.

If your company has a training project, or if you wish to draw on the resources of BCIT for support in any new venture, contact Part-time Studies to find out how we can help you.

Equipment Maintenance Program for Industry Services - A series of three practical workshops for those who are directly responsible for equipment maintenance; in particular, maintenance managers, superintendents, foremen and planners. Enrolment is restricted per workshop to allow participants the opportunity to work alone on a computer terminal. Hardware: IBM PCs or compatibles. Software: COMAC Computerized Preventive Maintenance System.

Eric Morse, Program Head
Industry Services
Telephone: 432-8638

PROFESSIONAL AGENCIES OF INTEREST TO PART-TIME STUDENTS

APPLIED SCIENCE TECHNOLOGISTS AND TECHNICIANS OF BRITISH COLUMBIA (ASTTBC)

Most part-time engineering technology courses offered through BCIT Part-time Studies are recognized for credit toward certification with the Association. If you are unsure as to whether you will gain credit toward certification and want to ensure you are embarking on an acceptable program, please contact the Association office.

ASTTBC is a professional association which registers and certifies technicians and technologists in the fields of agrology, architecture, engineering, forest resources and surveying. Certification with the Association is primarily dependent on academic qualifications in accordance with national standards, however, credit is granted for extensive experience.

There are four levels of membership:

Applied Science Technologist (A.Sc.T.) - Persons who have completed an accredited program of technological study (usually a Diploma of Technology or the academic equivalent), and who have at least two years of contemporary practical experience and are employed in an occupation which reflects the level of their technological training;

Certified Technician (C.Tech.) - Persons who have completed an accredited technician certificate program (usually a Certificate of Technology or academic equivalent), and who have at least two years of contemporary practical experience and are employed in an occupation which reflects the level of their technical training;

Associate Member - Persons who are employed in an applied science occupation and-or who are engaged in programs of study which will eventually satisfy the requirements for Technologist or Technician membership. Persons may have the academic qualifications for "A.Sc.T." or "C.Tech." but lack the experience, or may have extensive experience but lack the academic qualifications;

Student Member - Persons who are registered as full-time students in a technologist or technician program accredited (approved) by the Association. A special application form must be used.

In evaluating applications for membership and certification the ASTTBC Board of Examiners, which is comprised of Applied Sciences Technologists, Professional Engineers, Professional Agrologists, Professional Foresters and others, takes into consideration career training other than that received at BCIT, including qualifications from foreign institutes.

The Board of Examiners is responsible for recommending certification levels and providing applicants with the program of certification levels and providing applicants with the program of studies required to progress to the next certification level. The board therefore recommends that to ensure full credit toward certification, applications be submitted to the Association before beginning a program of studies.

Please note that the processing of applications generally takes four to six months.

Objectives of ASTTBC

- professional certification and registration;
- professional practice including a code of ethics and disciplinary procedures;
- accreditation of technology programs;
- services for business and industry, government and the general public, particularly in the areas of disciplines represented.

Benefits of Membership

In addition to the professional status and recognition granted by ASTTBC, benefits of membership and services provided include:

- enhanced career options because of professional recognition;
- professional development through continuing education programs;
- education standards maintained at colleges and institutes-through an accreditation program which is national in scope;
- distinctive member certificate;
- employment assistance and referral services;
- monthly newsletter and other communications;
- biennial salary survey;
- distinctive stamp or seal for all qualified members;
- group life insurance program that cannot be matched.

In accordance with these general objectives, the Association actively represents technicians and technologists in B.C. Its activities include the promotion of technological programs offered by BCIT Part-time Studies and community colleges; the presentation of briefs leading to the development of an accreditation program to aid in the maintenance of the highest educational standards; involvement with the Anik 'C' Satellite project wherein the Association is working with industry to provide short technical seminars throughout the province; and, most recently, working toward appropriate recognition in law for its members.

Persons interested in the Association should write to: Director of Membership Services, ASTTBC, Discovery Park, 3700 Gilmore Way, Burnaby, B.C., V5G 4M1, or telephone (604) 433-0548.

THE INSTITUTE OF NAVAL ARCHITECTS OF BRITISH COLUMBIA (INABC)

The Institute of Naval Architects of British Columbia has made arrangements with BCIT to enable students to take courses leading towards the requirements for membership in the Institute.

The Institute of Naval Architects of British Columbia was formed in 1975 as a controlling agency for the organization and development of the profession of Naval Architecture.

Prospective students who are now employed in the shipbuilding industry are advised to register with the Institute as student members. Interested students may contact the Institute by mail at 2206 West 33rd Avenue, Vancouver, B.C., V6M 1C2, or by telephone at (604) 261-9102

THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF BRITISH COLUMBIA (APEBC)

The Association of Professional Engineers of British Columbia has a formal examination system leading to registration for students who, after careful consideration and investigation, find they cannot attend university. It should be stressed that this program of Association examinations is not an easy way to qualify academically as a professional engineer. The program comprises about 26 examinations, which cover approximately the same material as a four-year engineering course at a university. To complete the whole program a candidate would require years of home study.

The Association does not offer courses to prepare candidates for these examinations. Some courses offered at BCIT provide one method of assisting students to prepare for the examinations. However, the student should note that the diploma courses at BCIT were not designed specifically for this purpose. A student embarking on the Association's examination program should seek advice from the Association of Professional Engineers to ensure that a course taken at BCIT will provide a reasonable amount of assistance in studying for a course in the Association's syllabus. The syllabus contains course outlines so that comparison of content may be made with the content of BCIT courses. For further information contact: The Association of Professional Engineers of British Columbia, 2210 West 12th Avenue, Vancouver, B.C., V6K 2N6, or telephone (604) 736-9808.

Fundamental Examination Tutorials

The School of Engineering Technology Part-time Studies is prepared to offer tutorials for fundamental examination candidates if sufficient demand is shown.

1. Calculus
2. Vector Analysis and Differential Equations
3. Linear Algebra and Numerical Analysis
4. Computer Science
5. Probability and Statistics
6. Physics
7. Chemistry
8. Statics and Dynamics
9. Mechanics of Fluids
10. Thermodynamics
11. Engineering Materials
12. Theory of Circuits and Power Engineering
13. Strength of Materials
14. Organic Chemistry

Interested people must indicate their intention to take specific tutorials by sending a $50 commitment fee per tutorial **prior to mid July**. This fee is fully refundable if insufficient demand is shown. Fees are payable in full by August 12. They are estimated to range between $200 and $500 depending on tutorial length and number of students attending.

For further information contact:
Program Assistant, Engineering Technology.
Telephone: 432-8521, or
Program Advisor, Engineering
Telephone: 432-8467

THE BUILDING OWNERS AND MANAGERS ASSOCIATION (BOMA)

BOMI is the Building Owners and Managers Institute International, a non-profit organization whose distinct purpose is to professionalize the industry by providing educational programs for BOMA members. These programs are usually operated in cooperation with the regional BOMA Office. The SMA (Systems Maintenance Administrator) program confers two levels of proficiency; SMT (Systems Maintenance Technician) after completion of the first five courses and SMA after completion of the remaining three. These courses are specifically designed for building operating employees. The Institute also offers the RPA (Real Property Administrator) program through this office, which is an extensive and intense course designed to train the modern property manager in the essential specialties of building systems, design economics, marketing, accounting, finance, etc.

The SMA program has been fully endorsed by the employer members of BOMA B.C., and current candidates enrolled in the program are employed by British Columbia Building Corporation, B.C. Tel, Block Bros. Property Management, Sears and Dominion Management among others. For the SMA graduate, the benefits are compelling. Becoming more proficient in your current role, this is obvious. Being able to manage ALL operating systems in almost any kind of facility opens the door to an expanded career. The opportunities are unlimited.

Students who have successfully completed courses 1, 3, 4 and 5 of the SMA Program are eligible to write the examination for the British Columbia Boiler Operators Certificate of Competency and receive four months credit toward the required period of employment.

How to get started

The first step is to enroll in the Institute. Enroll at the BOMA Vancouver office. The second step is to choose one of the study options available. Look at the description of the options below and send the appropriate forms back to begin your program.

Program option

CLASSROOM: In the Vancouver area, SMA classes are held at BCIT (British Columbia Institute of Technology). Note that not all courses are given concurrently. You may take the courses in any order.

SELF STUDY: Individuals in areas where it is not convenient to get to Vancouver on a regular basis can take the SMA program on a self-study basis. A student will receive the course material which is set up for self-study with each lesson having a pre-test which indicates to the student what should be learned from the lesson, several mid-lesson tests and a final lesson test. A sample lesson will be sent on request. All SMA examination arrangements are made with a community college convenient to the students.

All program information from: SMA Program, BOMI B.C., #601 - 325 Howe Street, Vancouver, B.C., V6C 1Z7, or telephone (604) 684-3916.

Programs

CIVIL TECHNOLOGIES

Ed Hull, P. Eng., Associate Dean
Telephone: 432-8501

Building Technology
Civil and Structural Technology
Surveying Technology
Transportation Systems (Highways) Technology

Building Technology

Anna Maharajh, Dipl.T., A.Sc.T., M.C.I.Q.S.,
Program Co-ordinator
Telephone: 432-8586 or 434-5734, local 5837
Program Advisor
Telephone: 432-8467

Programs leading to the award of the Certificate of Technology, or Intermediate Certificate, in Building Technology consist of building technology courses plus mandatory core courses and other technology courses to the required total credits. All programs must be submitted to the program advisor for approval by the Technology Department.

The Building Technology program is accredited by the Applied Sciences Technologists and Technicians of British Columbia.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY

		Credit
BLDG 151	Drafting and Design 1: Introduction	6.0
BLDG 152	Construction 1	6.0
BLDG 251	Drafting and Design 2: Architectural Presentation	6.0
BLDG 252	Construction 2	9.0
BLDG 351	Drafting and Design 3: Architectural Design	6.0
CIVL 101	Statics	6.0
COMM 160	Introduction to Business and Technical Communication	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0

CERTIFICATE OF TECHNOLOGY

Prerequisite: Completion of Intermediate Certificate of Technology or equivalent.

		Credit
BLDG 154	Construction Industry Procedures:Introduction	
BLDG 155	Construction Contracts	3.0
BLDG 253	B.C. Building Code: Housing OR	
BLDG 353	B.C. Building Code: Use and Occupancy	3.0
BLDG 256	Construction Estimating 1	3.0
BLDG 356	Construction Estimating 2	3.0
BLDG 355	Construction Specifications	4.5
CIVL 250	Stress Analysis 1 (Strength of Materials)	3.0
CIVL 350	Stress Analysis 2 (Strength of Materials)	3.0
COMM 175	Letters and Memos	3.0
	Elective	3.0

Year 1 Equivalency

Prerequisite: Completion of Certificate of Technology or equivalent.

		Credit
COMM 183	Technical Reports	3.0
ELEC 150	Illumination	3.0
MATH 203	Technical Mathematics 3: Calculus	6.0
MSYS 103	Plumbing	3.0
MSYS 212	Heating and Ventilation 1	3.0
OPMT 187	Project Planning and Scheduling	3.0
PHYS 131	Physics 1 Part 1	3.0
PHYS 132	Physics 1 Part 2	3.0

Advanced, Optional and Elective Courses

		Credit
BLDG 159	Architectural and Industrial Illustration	3.0
BLDG 181	Fire Protection Engineering	3.0
BLDG 254	Project Management: Introduction to Building Development	3.0
BLDG 258	Computer Applications in Building Technology 1	3.0
BLDG 352	Construction 3	3.0
BLDG 354	Project Management: Contract Management	3.0
BLDG 452	Construction 4	4.5
BLDG 454	Project Management: Construction Management	3.0
BLDG 456	Construction Estimating 3	3.0
BLDG 459	Building Acoustics	3.0
ELEC 250	Electrical Systems	3.0
MSYS 301	Heating and Ventilation 2	3.0
MSYS 400	Air Conditioning Systems	6.0
SURV 108	Engineering Survey	7.0

Course Descriptions

BLDG 151 Drafting and Design 1: Introduction to Architectural Drafting and Design — Elementary drafting techniques, lettering and symbols. Brief history of architecture with specific study of the development of building technology. Development of a technical vocabulary. Assignments concentrate on building element description rather than on geometrical objects.
6 credits

BLDG 152 Construction 1 — Introduces the basic principles of building construction. Develops skills to produce a basic set of construction working drawings. Topics include site layout, foundation details, western wood frame detailing, preparation of a partial set of working drawings for a single family residence. A list of necessary drafting equipment will be issued on the first evening.
6 credits

BLDG 154 Construction Industry Procedures: Introduction — Topics include the basis of building development; design, bidding and contracting procedures; types of construction contracts; principles of measurement; pricing and specification of construction work and the basis of construction costs. **3 credits**

BLDG 155 Construction Contracts — Fundamentals of contracts. Parties to construction contracts. Basic types of construction contracts. Relationship between information and risk. Standard forms of construction contracts used in Canada and elsewhere. Appropriate documentation and related issues.
3 credits

BLDG 159 Architectural and Industrial Illustration — Provides grounding in architectural and industrial illustration and the scope, styles and techniques of contemporary presentation. Introduces illustration, elements of rendering form and space, entourage techniques, perspective, photographic techniques, black-white, color and mixed media. **3 credits**

BLDG 181 Fire Protection Engineering — This course reviews requirements and other considerations which must be taken into account when designing fire protection systems for buildings. It is a practical (hands-on) approach to fire protection engineering and will not deal with interpretations of the National Building Code or other related jurisdictional documents. **3 credits**

BLDG 210 Building Materials and Methods 2 — High-tech materials (polymers and epoxies) used in concrete work, roofing membranes and wood products. Behavior of these materials under given circumstances. Techniques of application. Methods of incorporating and specifying into the design of new and old buildings. Prerequisite: BLDG 103. **3 credits**

BLDG 211 Building Materials and Methods 3 — Identification of various types of building failures or impending failures due to incorrect material selection and design, construction errors or maintenance neglect and deterioration in buildings. Finding solutions to these problems. Prerequisite: BLDG 210. **3 credits**

BLDG 212 Building Materials and Methods 4 — Investigative techniques and constraints involved in the process of solving building failures and problems. Topics include: compilation of data, report writing, use of photography, litigation requirements and interpretation of contract documents. Prerequisite: BLDG 211. **3 credits**

BLDG 249 Building Computer Drawing: Management and Productivity — Offers the practical skills required to produce cost effective CADD drawings. The course covers the most utilized DOS commands, tips on system configuration and equipment selection, efficient use of AutoCAD commands, productive management techniques, advantages of customization and related subjects. **6 credits**

BLDG 251 Drafting and Design 2: Architectural Presentation — A continuation of BLDG 151. Topics include descriptive geometry and its use in design presentation, description of building elements through isometric and axonometric projection, one and two point perspectives; application of regulations and other restrictions in design drafting and presentation; design and drafting services, drawing applications. Prerequisite: BLDG 151 or permission of the instructor. **6 credits**

BLDG 252 Construction 2 — A continuation of BLDG 152. Topics include western frame and modified post and beam construction; details for fireplaces, stairs, doors and windows; further development of working drawings to include the foregoing elements. Prerequisite: BLDG 152 or permission of the instructor.
9 credits

BLDG 253 B.C. Building Code: Housing — Gives students a working knowledge of Part 9 of the 1985 B.C. Building Code for housing. Prepares students to write the exam which fulfills the technical requirements for the Building Inspectors Association of B.C. Certificate Level 1 (housing) Inspector. **3 credits**

BLDG 254 Project Management: Introduction to Building Development — Introduces students to the considerations of the project process the development of raw land from the recognition of the need for a building or facility through feasibility studies, financing, budget control and design evolution. Prerequisite: some knowledge of building construction. **3 credits**

BLDG 256 Construction Estimating 1 — Introduces general theories of measurement and pricing of construction work. Specific study of particular methods of measurement and techniques of pricing; application to elementary examples of work; introduction to bidding procedures and documentation; sources of cost data; preparation for CIQS exam 103. Prerequisite: some knowledge of building construction. **3 credits**

BLDG 258 Computer Applications in Building Technology 1 — Students learn the capabilities and limitations of digital computer hardware; sufficient programming to write and document simple BASIC programs and practical computer applications for architecture and construction. Lectures cover computer programming, program documentation, computer hardware technology, word processing, computer systems and CADD. Lab work covers writing, documenting and running building industry computer programs using BASIC language and commercial software packages that have direct applications for the building industry.
3 credits

BLDG 351 Drafting and Design 3: Fundamentals of Architectural Design — Studies specific aspects of design principles — simple design problems resolution, client statement of needs, basic design vocabulary and delegation of directions from a superior to a junior. Topics include site determinants: program planning; living, dining, sleeping, dressing, kitchen and utility facilities; planning multiple dwellings; student residences and other residential topics. Prerequisite: BLDG 251. **6 credits**

BLDG 352 Construction 3 — A continuation of BLDG 252. Principles of fire-resistive construction. Fundamentals of building science relative to weathering, deterioration and heat transfer. Industrial post and beam systems. Masonry, steel and concrete structures. Drawing applications. Prerequisite: BLDG 252 or permission of the instructor. **3 credits**

BLDG 353 B.C. Building Code: Use and Occupancy — A study of the current B.C. Building Code of Canada (exclusive of housing, Part 9). The purpose, scope and content is examined through a brief history of the code and a general review of its structure and contents, principles and concepts. Part 3 is considered in detail. This course will be of use to architects, draftsmen, interior

designers, building inspectors, fire department inspectors, contractors, mortgage authorities, and those in similar areas of the construction industry who are designing, approving, or carrying out projects. **3 credits**

BLDG 354 Project Management: Contract Management - Designed to provide construction professionals (architects, engineers, project managers, superintendents and estimators) with an understanding of the basic principles of law as it applies to building construction projects. The areas of law to be covered include contract formation and interpretation; negligence law; bonding and insurance; labor law and industrial relations; builders' liens; delay and acceleration claims; and sale of goods legislation. Prerequisite: some knowledge of building construction. **3 credits**

BLDG 355 Construction Specifications — Language as a means of communication; style in specifications. Organization and presentation of information in construction contract documentation. Filing and retrieval of information using masterformat. Preparation and reproduction procedures for production of project manuals. Study of construction materials and methods. Specification office organization. Prerequisite: good knowledge of building construction. **4.5 credits**

BLDG 356 Construction Estimating 2 — A continuation of BLDG 256. More detailed study and application of measurement and pricing of work for specific trades, with emphasis on wood framing, concrete work and masonry construction. Detailed examination of CIQS methods for measurement of construction work. Tendering procedures and budget estimating. Preparation for CIQS exam 203. Prerequisite: BLDG 256 or permission of instructor. **3 credits**

BLDG 452 Construction 4 — A continuation of BLDG 352. Curtain walls, panel walls and partitions. Exterior and interior finishes, drawing applications. Preliminary freehand sketching of details. Prerequisite: BLDG 352 or permission of instructor. **4.5 credits**

BLDG 454 Project Management: Construction Management — Students prepare for the administrative and operations management demands of a construction company. Topics include forms of ownership, head office practices and contracts, cash flow, subtrade co-ordination, field supervision, cost control, equipment management, purchasing controls, warehousing and labor relations. Prerequisite: some knowledge of building construction. **3 credits**

BLDG 456 Construction Estimating 3 — A continuation of BLDG 356. Measurement and unit pricing of specific construction details. Preparation of estimate summaries and bids or proposals to owners or clients. Construction cost accounting. Documentation used in estimating and cost accounting processes. Bid strategies, bid depositories, bid procedures in general. Preparation for CIQS exam 303. Prerequisite: BLDG 356 or permission of instructor. **3 credits**

BLDG 459 Building Acoustics — Theory and principles of sound, including properties, propagation, sources and measurement techniques. Noise criteria and control of noise in buildings. Selection of materials having appropriate acoustical and aesthetic qualities for buildings. Calculations encountered in acoustical considerations. **3 credits**

CIVL 101 Statics — Vectors, force systems, graphical analysis, resultants, components, moments, equilibrium laws, force polygons, funicular polygons, frames and trusses, stress diagrams, Bowes' notation, flexible tension members, load shear and bending moment curves. Closely supervised problem sessions are used to provide the student with practice in common analytical and graphical solutions to problems of static load on statically determinate structures. Prerequisite: MATH 101. **6 credits**

CIVL 250 Stress Analysis 1 (Strength of Materials) — Examines simple stresses, stress-strain relationships and elasticity, material properties, temperature stress, Poilson's ratio, safety factors, compound bars and columns, simple bolted and welded connections and flexural stress. Testing techniques in the lab are introduced along with strain gauges, extensometers, and data evaluation. Prerequisite: CIVL 101. **3 credits**

CIVL 350 Stress Analysis 2 (Strength of Materials) — Topics include: shear stresses in beams, deflection and rotation, restrained and continuous beams, eccentric loading and combined stresses, Mohr's circle analysis and column theory. Some testing in the materials lab will illustrate theoretical principles. Prerequisite: CIVL 250. **3 credits**

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communicating in business and industry. It offers practical techniques for planning, organizing, selecting and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures and summaries. Oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 175 Letters and Memos — Covers communications inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered. **3 credits**

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in writing problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphics and formal report format. Persuasive presentations are also included. **3 credits**

ELEC 150 Illumination — An introductory course in illumination which examines electrical systems pertaining to buildings. Deals with the language of lighting, design methods, characteristics and types of light sources and the economics of lighting. As the lighting system is generally designed by the electrical system designer, it is necessary to have a working knowledge of lighting systems when studying the electrical system. Prerequisite: MATH 101 and 102. **3 credits**

ELEC 250 Electrical Systems — Students learn how to plan the electrical system for a specific building with the electrical designer. How to read and work with common electrical drawings and specifications, understand single and three-phase systems, and power factor correction for minimal operations costs; recognize and avoid building designs that create costly electrical design problems. Prerequisite: ELEC 150. **3 credits**

MATH 101 Technical Mathematics 1: Trigonometry — A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry.

Topics emphasized are the plotting, interpretation and uses of logarithmic and semilogarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 203 Technical Mathematics 3: Calculus — An introductory course in calculus and its technical applications involving the differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions. The course emphasizes the application of calculus to engineering technology problems. Prerequisite: MATH 101 and 102. This course is scheduled to run in 89-90 and 91-92. It will not be offered in 88-89 or 90-91. **6 credits**

MSYS 103 Plumbing — Topics include codes, basic engineering principles and graphic presentations related to plumbing systems design, load calculations, piping methods, sizing of system components for storm and sanitary drainage and water distribution. Some drafting skill will be required. Prerequisite: MECH 100 or MECH 140. **4 credits**

MSYS 212 Heating and Ventilation 1 — Covers the principles involved with heat loss in buildings and practises of heating and ventilation, encompassing a study of system components and design procedures. These will then be applied to the preparation of heat loss calculations and working drawings for a heating-ventilating system. Prerequisite: MECH 100. **6 credits**

MSYS 301 Heating and Ventilation 2 — Principles and practices of heating and ventilation for residential, commercial and institutional buildings. Instructional material encompasses fuel oil, gas and solar heat energy sources; fuel handling heating boilers; solar collectors; building heat loss evaluation; building ventilation, load evaluation; space air distribution; ducted air distribution; warm air heating. Prerequisite: MSYS 212. **3 credits**

MSYS 400 Air Conditioning Systems — Part 3 of a three-part course on heating, ventilation and air conditioning. Properties of air extending use of psychrometric chart to air conditioning comfort criteria and examination of air conditioning processes; refrigeration for air conditioning, encompassing evaporator, compressor, condensor and expansion valve performance characteristics and selection; air conditioning systems, encompassing representative unitary, constant volume and variable volume systems. Prerequisite: MSYS 301. **10.5 credits**

OPMT 187 Project Planning and Scheduling — For those who require basic information about the critical path method (CPM) and its application to project management. It introduces the fundamentals of CPM as used in planning, scheduling, resource allocation and project management. The course includes an introduction to planning and scheduling techniques; Gantt charts, arrow diagrams; precedence diagrams; PERT; time-cost relationships; resource allocation; bid determination; project management and the role of allocation; bid determination; project management and the role of the computer. **3 credits**

PHYS 131 Physics 1 Part 1 — Topics include kinematics, statics, linear and rotational dynamics, properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable). **3 credits**

PHYS 132 Physics 1 Part 2 — Topics include properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable) and PHYS 131. **3 credits**

SURV 108 Engineering Survey — Covers the basic use of levels — open plate and optic transits, tape measurement methods of horizontal distance and direction determination. Computations: slope reduction, open and closed traverse calculations, benchmark levelling, steel and tape correction techniques, electronic distance measurements, stadia work, tachometers, route surveys, earth work, site work, construction control. Upon completion, students can use a variety of survey instruments and office procedures, and make plans, profiles and maps to determine precise sizes, shapes and locations. **7 credits**

Civil and Structural Technology

Marsh Heinekey, B.Tech., Dipl.T., Dipl.Adult Ed., A.Sc.T.,
Program Coordinator
Telephone: 434-5734 Local 5346
Program Advisor
Telephone: 432-8467

Civil and Structural part-time studies courses are designed to accommodate a variety of career-oriented goals for part-time learners. The Certificate of Technology is designed to satisfy the academic requirements for a certified technician with A.S.T.T.B.C. A student can elect to complete a diploma of technology on a part-time basis. The flexibility of the program will allow the student to complete first year day school equivalency and enter directly into second year day school. In addition, Civil and Structural offers Intermediate Certificates in Civil and Structural as well as post-diploma courses. All programs consist of technology courses and mandatory core subjects. Experienced students can apply for experiential learning credit for some courses. All programs must be submitted to the Program Advisor for approval by the Civil and Structural Department. It would be to your advantage to register for the program of your choice, using our career counselling expertise.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN CIVIL AND STRUCTURAL TECHNOLOGY: STRUCTURAL OPTION

		Credit
CIVL 101	Statics	6.0
CIVL 108	Graphical Communication 1	2.5
CIVL 208	Graphical Communication 2	2.5
CIVL 250	Stress Analysis 1 (Strength of Materials)	3.0
CIVL 350	Stress Analysis 2 (Strength of Materials)	3.0
CIVL 383	AutoCAD 1 for Civil Engineering	3.0
CIVL 400	Structural Design 1	6.0
COMM 160	Introduction to Business and Technical Communication	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0
	Approved elective(s)	10.0

Courses may be substituted with prior approval.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN CIVIL AND STRUCTURAL TECHNOLOGY: CIVIL OPTION

		Credit
CIVL 102	Public Works Inspection	4.0
CIVL 104	Construction Materials Testing Fundamentals	2.5
CIVL 108	Graphical Communication 1	2.5
CIVL 109	Concrete Technology	3.0
CIVL 110	Asphalt Technology	3.0

		Credit
CIVL 159	Hydrology 1	2.0
CIVL 175	Introduction to Highways (Roads and Streets)	3.0
CIVL 208	Graphical Communication 2	2.5
COMM 160	Introduction to Business and Technical Communication	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0
SURV 108	Engineering Survey	7.0

Courses may be substituted with prior approval.

CERTIFICATE OF TECHNOLOGY IN CIVIL AND STRUCTURAL TECHNOLOGY

CIVL 101	Statics	6.0
CIVL 102	Public Works Inspection	4.0
CIVL 104	Construction Materials Testing Fundamentals	2.5
CIVL 108	Graphical Communication 1	2.5
CIVL 109	Concrete Technology	3.0
CIVL 110	Asphalt Technology	3.0
CIVL 159	Hydrology 1	2.0
CIVL 169	Soil Mechanics 1	3.0
CIVL 173	Estimates and Contracts for Heavy Construction 1	2.5
CIVL 175	Introduction to Highways (Roads and Streets)	3.0
CIVL 180	Introduction to Urban Traffic Engineering	3.0
CIVL 208	Graphical Communication 2	2.5
CIVL 250	Stress Analysis 1	3.0
CIVL 259	Hydrology 2	2.0
CIVL 273	Hydraulics 1	3.0
CIVL 274	Estimates and Contracts for Heavy Construction 2	2.5
CIVL 383	AutoCAD 1 for Civil Engineering	3.0
CIVL 384	Civil Engineering Computer Applications	3.0
COMM 160	Introduction to Business and Technical Communication	3.0
COMM 183	Technical Reports	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0
SURV 108	Engineering Survey	7.0
	Approved Electives	2.5

CIVIL AND STRUCTURAL PART-TIME STUDIES: 1ST YEAR EQUIVALENCY

CIVL 101	Statics	6.0
CIVL 108	Graphical Communication 1	2.5
CIVL 109	Concrete Technology	3.0
CIVL 159	Hydrology 1	2.0
CIVL 175	Introduction to Highways (Roads and Streets)	3.0
CIVL 208	Graphical Communication 2	2.5
CIVL 250	Stress Analysis 1 (Strength of Materials)	3.0
CIVL 259	Hydrology 2	2.0
CIVL 273	Hydraulics 1	3.0
CIVL 350	Stress Analysis 2 (Strength of Materials)	3.0
CIVL 373	Hydraulics 2	3.0
CIVL 384	Civil Engineering Computer Applications	3.0
CIVL 400	Structural Design 1	6.0
COMM 160	Introduction to Business and Technical Communication	3.0
COMM 175	Letters and Memos	3.0
COMM 183	Technical Reports	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2:Logarithms and Analytic Geometry	3.0
MATH 203	Technical Mathematics 3: Calculus	6.0
PHYS 131-132	Physics 1	6.0
PHYS 133-134	Physics 2	6.0
SURV 108	Engineering Survey	7.0

DIPLOMA OF TECHNOLOGY

Prerequisite:	Year 1 equivalency	82.0
BLDG 354	Project Management	3.0
BLDG 454	Project Management	3.0
CIVL 110	Asphalt Technology	3.0
CIVL 169	Soil Mechanics 1	3.0
CIVL 201	Construction Documents and Cost Control	3.0
CIVL 270	Soil Mechanics 2	3.0
CIVL 275	Highways Design 2	3.0
CIVL 278	Municipal Services 1	3.0
CIVL 282	Land Use Planning	3.0
CIVL 314	Urban Street Design	3.0
CIVL 315	Subdivision Planning	3.0
CIVL 378	Municipal Services 2	3.0
CIVL 383	AutoCAD 1 for Civil Engineering	3.0
CIVL 386	Computer Highway Design	3.0
CIVL 431	Soil Mechanics 3	3.0
CIVL 450	Structural Design 2	6.0
CIVL 473	Hydraulics 3	3.0
MATH 204	Technical Mathematics 4: Calculus	6.0
OPMT 187	Project Planning and Scheduling	3.0
SURV 313	Field Survey	7.0

POST-DIPLOMA COURSES

Post diploma or graduate courses are designed for technologists or engineers with industrial experience who wish to upgrade, update or expand their career opportunities.

		Credit
CIVL 501	Reinforced Masonry Design	3.0
CIVL 502	Advanced Concrete Technology	3.0
CIVL 503	Transportation Planning	3.0
CIVL 504	Design in Pre-stressing and Post-tensioning Concrete	3.0
CIVL 505	Formwork Design 1	3.0
CIVL 506	Formwork Design 2	3.0
CIVL 507	Structural Design in Reinforced Concrete	3.0
CIVL 508	Highway Drainage Design	3.0

Course Descriptions

BLDG 354 Project Management: Contract Management — Examines the control of the project management process, types of contracts and the project manager's role. Tender documents and bid processes, bonds and insurance. Planning and scheduling the master plan and dimensions of the project. The job plan and off-site management. **3 credits**

BLDG 454 Project Management: Construction Management — Students prepare for the administrative and operations management demands of a construction company. Topics include forms of ownership, head office practices and contracts, cash flow, subtrade co-ordination, field supervision, cost control, equip-

ment management, purchasing controls, warehousing and labor relations. Prerequisite: Some knowledge of building construction. **3 credits**

CIVL 100 Introduction to Lotus 1 2 3 Engineering Application — A short course on the use of Lotus 1 2 3 to solve engineering problems. Each student will have the use of a computer and will be able to successfully use Lotus software at the completion of the course. **1 credit**

CIVL 101 Statics — Vectors, force systems, graphical analysis, resultants, components, moments, equilibrium laws, force polygons, funicular polygons, frames and trusses, stress diagrams, Bowes' notation, flexible tension members, load shear and bending moment curves. Closely supervised problem sessions are used to provide the student with practice in common analytical and graphical solutions to problems of static load on statically determinate structures. Prerequisite: MATH 101. **6 credits**

CIVL 102 Public Works Inspection — Specially designed by the public works inspection committee (a joint committee of the industry and BCIT) to provide training for those in public works inspection. The course is a highly practical one with instructors drawn from public works inspectors currently active in this area. It includes field sessions to complement classroom activities. Enrolment is limited, so if you are interested you are advised to act now, or to contact our program advisor for further information. **4 credits**

CIVL 104 Construction Materials Testing Fundamentals — Provides students with the opportunity to become proficient in lab procedures for construction materials. It will prepare students for other courses requiring the knowledge of testing procedures.CIVL 104 is a prerequisite for CIVL 109, 110 and 169. **2.5 credits**

CIVL 108 Graphical Communication 1 (Drafting Fundamentals) — Introduces the concept of graphical communication in two ways. The first is through development of the ability to produce freehand sketches (that is, without the use of conventional drafting equipment) in the office or the field to illustrate a concept or procedure. Secondly, the student is exposed to construction terminology and graphics standards employed today in the civil-structural-construction field. Students will be exposed to a broad range of subject areas within the civil engineering field including sitework and excavation, centreline profiles, cut and fill sections, contours, open channel flow and culverts, storm and sanitary drainage, pressure flow and ancillary works. As well, the student will be introduced to architectural drawings and details, and gain an appreciation of the inherent differences in types of construction drawings. **2.5 credits**

CIVL 109 Concrete Technology -Gives students the knowledge required to select suitable materials for making quality concrete; design a concrete mix for strength, workability and economy; sample and conduct quality control tests on concrete and aggregates; understand the theory and practices used in concrete manufacturing and construction. Topics include cements, water-cement ratio, admixtures, concrete properties manufacturing, transportation, placing, finishing, curing, CSA code A23. 1 and 2 Inspection Techniques. Prerequisite: CIVL 104. **3 credits**

CIVL 110 Asphalt Technology — Upon completion students will know how to select suitable materials for asphaltic concrete design using the Marshall method. Topics include plant and paving quality control, asphaltic cement testing, calculation for asphaltic design. Prerequisite: CIVL 104. **3 credits**

CIVL 159 Hydrology 1 — Focuses on the fundamental concepts of the hydrologic cycle, measurement of precipitation, streamflow measurement and calculation. The determination of drainage basins and catchment areas and analysis of basin characteristics for determination of run-off coefficients will provide the student with a basis for further studies in run-off calculation and the evaluation of hydrologic data. **2 credits**

CIVL 169 Soil Mechanics 1 — Teaches the basic principles of soil mechanics and soil testing. Topics are mass-volume relationships, soil testing, soil classification, compaction, geology, subsurface investigation, permeability and pressure diagrams, effective stress. Prerequisite: CIVL 104. **3 credits**

CIVL 173 Estimates and Contracts for Heavy Construction 1 — Presents the basic concepts and techniques for the preparation of estimates and tenders for the construction of civil engineering projects by contract. The course consists of lectures and the preparation of estimates for basic operations and components of a typical job. Topics include an introduction to the heavy construction industry, contracts and specifications, preparation of estimates and estimates resources; estimates for various projects; overhead costs; estimate adjustments; cost accounting and job cost control. **2.5 credits**

CIVL 175 Introduction to Highways (Roads and Streets)- Introduces the fundamentals of highways design and the basic concepts of highway engineering, including some geometric design theory. Topics include road classification, cross-section elements, horizontal and vertical alignment, capacity, level of service and the effect of vertical grades on traffic. This course leads to further studies in either highways or urban street design. **3 credits**

CIVL 180 Introduction to Urban Traffic Engineering — Introduces basic traffic engineering concepts. In general, traffic engineering entails the study of the movement and storage of vehicles on road systems. The topics covered are of particular interest to persons involved in municipal and highway engineering and-or land development. The course comprises lectures and assignments. Topics include driver, vehicle and traffic stream characteristics, highway and intersection capacity, intersection and parking layout, data collection techniques and traffic control. **3 credits**

CIVL 201 Construction Documents and Cost Control — Examines the three major types of construction contracts, their specific applications, the contractual relationship between the parties involved in a construction project and methods of recording and controlling construction costs in the planning and construction phases. A set of contract documents will be examined and critical areas highlighted through the use of construction scenarios. The student will gain an appreciation for the necessity of a thorough, understandable set of documents, and for the owner's representative-contractor to understand those documents. **3 credits**

CIVL 208 Graphical Communication 2 — This course builds on the material in CIVL 108. The student is introduced to structural drawings and details in timber, steel, concrete and masonry. Freehand sketching and industry graphics standards are used to introduce the student to graphical communications. Prerequisite: CIVL 108. **2.5 credits**

CIVL 250 Stress Analysis 1 (Strength of Materials) — Examines simple stresses, stress-strain relationships and elasticity, material properties, temperature stress, Pollson's ratio, safety factors, compound bars and columns, simple bolted and welded connections, and flexural stress. Testing techniques in the lab are introduced, along with strain gauges, extensometers and data evaluation. Prerequisite: CIVL 101 or CIVL 161. **3 credits**

CIVL 259 Hydrology 2 — Commences with the statistical basis for frequency and probability calculation and then introduces the analysis of existing data for the purpose of determining peak and flood flows. Future flood flow forecasting and design to accommo-

date specified flood and peak flows are discussed. Streamflow analysis including development of unit hydrograph; flood flow analysis based on prior streamflow history; the determination of snowmelt factors based on prior streamflow and temperature records are introduced. The general principles of hydrology and the specifics of the rational method are applied to the evaluation of small watersheds in determining design peak discharge flows based on established criteria. Prerequisite: CIVL 159. **2 credits**

CIVL 270 Soil Mechanics 2 — Basic soil mechanics theory is completed through lectures and laboratory work. This theory is then applied to geo-technical design problems. Topics covered are consolidation, shear strength, shallow and deep foundations and retaining walls. Prerequisite: CIVL 169. **3 credits**

CIVL 273 Hydraulics 1 — The first half of the course covers hydrostatics, including forces on plane and curved surfaces, and buoyancy. The second half introduces pipe flow and covers Bernoulli's equation and pipe friction. Prerequisite: CIVL 101, 160 or 259. **3 credits**

CIVL 274 Estimates and Contracts for Heavy Construction 2 — Allows students to gain further experience in the preparation of estimates, and to consider problems which arise in the administration of contracts for heavy construction jobs. The course consists of lectures and the preparation of an estimate for a highway construction job, and, possibly, a small bridge using SI standards. Topics include labor agreements, equipment ownership-rental and operating costs, materials, subcontracts, use of cost reports in preparing estimates, financial and legal aspects, and the administration of contracts. Prerequisite: CIVL 173. **2.5 credits**

CIVL 275 Highway Design 2 — Provides the working knowledge to design highways in accordance with RTAC standards. The course consists of lectures and a design project. Topics include detailed considerations of route selection, vertical and horizontal alignment, cross-sections, earthwork, mass haul diagrams and includes basic computer applications in the adjustment of design for earthwork balances. Prerequisite: CIVL 175. **3 credits**

CIVL 278 Municipal Services 1 — Illustrates the detail design process and the preparation of plan and profile drawings for municipal storm drainage projects. After an introduction to municipal drainage systems, hydrology and master drainage plans, the student will review basic sewer structures and appurtenances common to most drainage systems. Preparation of detailed catchment area plans and design tabulations will enable the student to finalize a plan and profile drawing for a portion of the overall design. Knowledge of hydraulics and hydrology will be required to comprehend the design concepts. Prerequisite: CIVL 272 or 273, CIVL 315. **3 credits**

CIVL 282 Land Use Planning — This course provides a working knowledge of the terms, definitions, criteria, considerations and process of urban land development. The required servicing for development, patterns of development, the process for approval of development, financial considerations and roles of various agencies and parties in the development process are also presented. Topics include: natural state land use assessment, planning elements, community zoning and site plans, neighbourhoods, lot and dwelling types, traffic considerations, road classifications, road patterns and names, lot layout design, cul-de-sacs, walkways and emergency routes. **3 credits**

CIVL 382 Computer Applications in Civil Technology — Introductory BASIC; development of flowcharts and programs for highway alignments, vertical and horizontal, parabolas and Euler spirals; earthworks, use of spreadsheets, word processing, data bases; use of large mainframe files and micros; the use of existing software to solve engineering problems. **4.5 credits**

CIVL 314 Urban Street Design — Through a review of the urban street classification system, students will determine the basic requirements for a road right-of-way and its relationship to other utilities. In preparing the design of a major road, it will be necessary to understand both vertical and horizontal design elements and the use of cross-sections to correlate design controls. The concepts of road drainage, intersection design, sidewalks, channelisation and drawing preparation will be discussed. A review of the design process, extent of field information, legal surveys and the preparation of as-constructed drawings will conclude the course. Prerequisite: CIVL 175, 208. **3 credits**

CIVL 315 Subdivision Planning — Provides an understanding of the planning concepts and restraints for subdivision development at the municipal-city level. Sections of the Municipal Act and local bylaws are reviewed to establish layout criteria, subdivision procedures and rezoning applications. Consideration will be given to engineering requirements and the concerns of external approving agencies. In preparing an actual subdivision plan, students will be evaluated based on the city, developer and engineers' view points, complete with a preliminary cost analysis. Prerequisite: CIVL 175, 208. **3 credits**

CIVL 350 Stress Analysis 2 (Strength of Materials) — Topics include: shear stresses in beams, deflection and rotation, restrained and continuous beams, eccentric loading and combined stresses, Mohr's circle analysis and column theory. Testing in the materials lab illustrates theoretical principles. Prerequisite: CIVL 250. **3 credits**

CIVL 373 Hydraulics 2 — A continuation of CIVL 273 which completes the topic of pipe flow. The course begins with simple networks and progresses through pump selection, flow measurement and waterhammer to complex networks and the application of Hardy Cross method and computer programs. Prerequisite: CIVL 272 or 273. **3 credits**

CIVL 378 Municipal Services 2 — This course completes the analysis of municipal servicing systems. The design of sanitary sewer collection and water distribution systems is discussed in detail. Principles of gravity flow are applied for the design of gravity sanitary sewer systems. Detail calculations, and plan and profile drawings are prepared to illustrate the final design. Following an overview of municipal water distribution systems, students will apply concepts of pressurized flow in the design of these systems. Details of materials and appurtenances are also discussed. Prerequisite: CIVL 272 or CIVL 273, CIVL 278. **3 credits**

CIVL 383 AutoCAD 1 for Civil Engineering — Hands-on use of AutoCADD. Students are instructed in basic commands and are given mini-projects such as RUSS centre line layout, property development layout. The course covers civil engineering drawing and geometrical-survey requirements for civil drafting. **3 credits**

CIVL 384 Civil Engineering Computer Applications - An introduction to computer applications in civil technology. Course covers introductory BASIC; development of flowcharts and programs for highway alignments, vertical and horizontal parabolas and Euler spirals; earthworks, use of spreadsheets, word processing, data bases; using PC type computers and existing software to solve engineering problems. **3 credits**

CIVL 386 Computer Highway Design — Hands-on use of PC-AT type computers in a project framework designing a highway from Contours to Bill of Quantities. Design is to preliminary stage. RTAC standards are employed. Prerequisite: CIVL 275. **3 credits**

CIVL 400 Structural Design 1 — Having previously studied forces and material properties, students learn to apply these to the analysis of real structures. They also study the effects of wind, snow and earthquake loads as determined by national standards. Design and analysis of steel and timber beams, columns, trusses and their connections are used as examples. Prerequisite: CIVL 350. **6 credits**

CIVL 431 Soil Mechanics 3 — Soil mechanics theory is used in geo-technical analysis and design. Topics include excavations and retaining structures, seepage analysis and flow nets, and slope stability. Prerequisite: CIVL 270. **3 credits**

CIVL 450 Structural Design 2 — For students taking Civil options. — For students taking Civil options. Through analysis and design projects, students are introduced to reinforced concrete as a structural material. The effects of continuity with structures are discussed and connection details for structural components in basic building materials are developed. Prerequisite: CIVL 400. **6 credits**

CIVL 473 Hydraulics 3 — Begins with normal flow and progresses through critical flow and control sections (weirs and the hydraulic jump) to gradually varied flow and natural channels. Includes the effects of channel constrictions and changes in streambed, as well as culvert design. Prerequisite: CIVL 373. **3 credits**

CIVL 483 AutoCAD 2 for Civil Engineering — Students will learn how to use LISP programming language and AutoCADD menu customizing to produce their own applications in civil and structural engineering. Prerequisite: CIVL 383. **3 credits**

CIVL 501 Reinforced Masonry Design — A course on the structural design, specification and inspection of reinforced load bearing masonry. The design of reinforced concrete block and hollow clay brick for axial, bending and shear forces to comply with CSA standards S304M84. Design of slender walls. Properties of local masonry materials including grouts and mortar; construction methods, inspection and testing of masonry; bricklaying workshop. Prerequisite: CIVL 450. **3 credits**

CIVL 502 Advanced Concrete Technology — Presents concrete theory to technicians and technologists familiar with concrete technology. Students learn to use statistical analysis to calculate strength trends; identify various behavioral characteristics of cement; analyze new trends in admixtures; design concrete mixes; use various nondestructive methods to determine concrete quality. New technology and the Canadian Standards are discussed. Class size limited to 20 students. Prerequisite: CIVL 109. **3 credits**

CIVL 503 Transportation Planning — Reviews the field of transportation engineering. Various transportation modes are investigated and related to the overall transportation network. Environmental, economical and political aspects of transportation systems are considered through discussion and films. Students prepare a report suitable for presentation to a planning department on some aspect of transportation. Prerequisite: CIVL 175, 180. **3 credits**

CIVL 504 Design in Pre-stressing and Post-tensioning Concrete — Designed for technologists and engineers involved in the construction and erection of pre-stressing and post-tensioning concrete members. Topics include construction design, installation, grouting and jacking techniques, and the materials and hardware used in this type of construction. Prerequisite: CIVL 450. **3 credits**

CIVL 505 Formwork Design 1: Under development.

CIVL 506 Formwork Design 2: Under development.

CIVL 507 Structural Design in Reinforced Concrete — Provides basic knowledge of structural design in reinforced concrete for individuals working in the design field. Enables students to design simple structures in reinforced concrete using the ultimate strength design method. The course covers bending and shear in reinforced concrete; simple beams and one-way slabs; compressive reinforcement; tee-beams; two-way slabs, columns; concentric loading; footings; retaining walls; introduction to simple prestressed concrete beams. Prerequisite: CIVL 450. **3 credits**

CIVL 508 Highway Drainage Design -Incorporates the fundamentals of hydrology, hydraulics and highway alignment design to provide a working knowledge of drainage control and drainage facilities design. Topics include legal implications of drainage control, hydraulic and structural design of culverts, ditch design, storm water system design, environmental considerations and the specification of materials. Prerequisites: CIVL 275, 373. **3 credits**

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communication in business and industry. It offers practical techniques for planning, organizing, selecting and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures and summaries. Oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 175 Letters and Memos — Covers communication inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered. **3 credits**

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in writing problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphics and formal report format. Persuasive presentations are included. **3 credits**

MATH 101 Technical Mathematics 1: Trigonometry — A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic and semi-logarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 203 Technical Mathematics 3: Calculus — An introductory course in calculus and its technical applications involving the differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions. The course emphasizes the application of calculus to engineering technology problems. Prerequisite: MATH 101 and 102. **6 credits**

MATH 204 Technical Mathematics 4: Calculus — A continuation of MATH 203. Topics include further work on integration, partial differentiation, an overview of Maclaurin, Taylor and Fourier series and the solution of differential equations. Special consideration is given to the use of Laplace Transforms. Prerequisite: MATH 203. **6 credits**

OPMT 187 Project Planning and Scheduling — For those who require basic information about the critical path method (CPM) and its application to project management. The course introduces the fundamentals of CPM as used in planning, scheduling, resource allocation and project management, and an introduction to planning and scheduling techniques; Gantt charts, arrow diagrams; precedence diagrams; PERT; time-cost relationships; resource allocation; bid determination; project management and the role of the computer. **3 credits**

PHYS 131 Physics 1 Part 1 — Topics include kinematics, statics, linear and rotational dynamics, properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12 (Physics 11 is desirable). **3 credits**

PHYS 132 Physics 1 Part 2 — Topics include properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12 (Physics 11 is desirable). **3 credits**

PHYS 133 Physics 2 Part 1 — Physics 2 with Physics 1 satisfies the knowledge required in various engineering and related technologies. Topics include sound, light, basic electricity and magnetism, basic semi-conductor theory, atomic and nuclear phenomena. Mathematical treatment requires algebra and trigonometry and possibly, some calculus. Prerequisite: PHYS 132. **3 credits**

PHYS 134 Physics 2 Part 2 — See PHYS 133. Prerequisite: PHYS 133. **3 credits**

SURV 108 Engineering Survey — Covers the basic use of levels, open plate and optic transits, tape measurement methods of horizontal distance, and direction determination. Computations including slope reduction, open and closed traverse calculations, benchmark levelling, steel and tape correction techniques, electronic distance measurements, stadia work, tachometers, route surveys, earth work, site work, construction control. Upon completion, students can use a variety of survey instruments and office procedures, and make plans, profiles and maps to determine precise sizes, shapes and locations. **7 credits**

SURV 313 Field Survey — Includes highway surveying; layout of centre line, circular, spiral and vertical curves; topographic surveys by ground survey methods; preparation of topographic plans; mining surveys; use of gyro theodolite; horizontal control by triangulation, trilateration and traverse; direction measurement; use of precise instruments; vertical control; trigonometric levelling; precise differential levelling; electronic distance measurement; calibration of instruments; hydrographic surveying; horizontal and vertical shore control; tide measurements; sounding methods; preparation of charts. Prerequisite: SURV 108. **7 credits**

Surveying Technology

D. Jarvos, Dipl.T., A.Sc.T., Program Coordinator
Telephone: 432-8283
Program Advisor
Telephone: 432-8467

The programs leading to the award of the Certificate of Technology, or Intermediate Certificate, in Surveying will consist of survey courses plus mandatory core courses and other technology courses to the required total credits. All programs must be submitted to the Program Advisor for approval by the Technology Department.

The Surveying Technology program is accredited by the Applied Sciences Technologists and Technicians of British Columbia.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN SURVEYING

COMM 160	Business and Technical Communication	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0
MECH 140	Drafting Fundamentals	3.0
PHYS 131	Physics 1 Part 1	3.0
PHYS 132	Physics 1 Part 2	3.0
SURV 108	Engineering Survey	7.0
SURV 112	Survey Computations 1	7.0
SURV 118	Programmable Calculators	3.0
	Electives from list below	10.0

CERTIFICATE OF TECHNOLOGY IN SURVEYING

Prerequisite: Intermediate Certificate of Technology in Surveying.

		Credit
COMM 183	Technical Reports	3.0
MECH 216	Drafting: Civil-Survey	3.0
SURV 311	Survey Computations 2	3.0
SURV 313	Field Survey	7.0
	Electives	14.0

Electives for above programs

COMM 175	Letters and Memos	3.0
MATH 203+	Technical Mathematics 3: Calculus	6.0
MATH 204+	Technical Mathematics 4: Calculus	6.0
PHOT 217+	Photogrammetry 1	7.0
PHYS 133	Physics 2 Part 1	3.0
PHYS 134	Physics 2 Part 2	3.0
SURV 215	Engineering Graphics: Programming Concepts	3.0
SURV 358	Introduction to Hydrogaphic Surveying (Theory)	3.0

NOTE: Courses marked + may be replaced by electives from list below.

YEAR 1 EQUIVALENCY

Completion of all the above courses are necessary for Year 1 full-time equivalency.

Advanced, Optional and Elective Courses

		Credit
MATH 125	BASIC 1: An Introduction to Microcomputers IBM PCs	3.0

		Credit
PHOT 102	Photo Interpretation and Remote Sensing	7.0
SURV 320	Land Use Control	3.0
SURV 362	Geodetic Surveying 1	3.0
SURV 363	Adjustment of Survey Measurements	3.0
SURV 365	Drafting and Survey CAD	2.0
SURV 410	Survey Computations 3	3.0
SURV 411	Survey Computations 4	7.0
SURV 426	Astronomy 1 and 2	7.0
SURV 463	Mathematical Cartography	5.0
SURV 465	Survey CAD 2	4.0

Course Descriptions

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communicating in business and industry. It offers practical techniques for planning, organizing, selecting and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures and summaries. Oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 175 Letters and Memos — Covers communications inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered. **3 credits**

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphics and formal report format. Persuasive presentations are included. **3 credits**

MATH 101 Technical Mathematics 1: Trigonometry — A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic and semilogarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 125 BASIC 1: An Introduction to Microcomputers

IBM PCs — Designed for engineering technology students with no previous BASIC programming or microcomputer experience. Topics include computer terminology, hardware, disk operating system, BASIC language concepts (input-output, BASIC arithmetic and functions, relational operators, branching statements, subroutines and graphics statements. **3 credits**

MATH 203 Technical Mathematics 3: Calculus — An introductory course in calculus and its technical applications involving the differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions. The course emphasizes the application of calculus to engineering technology problems. Prerequisite: MATH 101 and 102. This course is scheduled to run in 89-90 and 91-92. It will not be offered in 88-89 or 90-91. **6 credits**

MATH 204 Technical Mathematics 4: Calculus — A continuation of MATH 203. Topics include further work on integration, partial differentiation, an overview of Maclaurin, Taylor and Fourier series and the solution of differential equations. Special consideration is given to the use of Laplace Transforms. Prerequisite: MATH 203. This course will be offered every third year only. The next offering will be in 89-90. **6 credits**

MECH 140 Drafting Fundamentals — An introductory course for persons with little or no experience in graphics. Students are required to purchase drafting equipment and supplies on the first night of class. Students learn to produce and read simple drawings. Topics include scales, geometric constructions, basic orthographics, detail interpretation, line visibility, dimensioning, auxiliary views, true shape, inclined and skewed surfaces, sections, pictorials, working drawings and freehand sketches. **3 credits**

MECH 216 Drafting: Civil-Survey — A general insight into graphical aspects of civil problems for managers, construction workers, foremen, planners and estimators. Students study the application of drawing skills and techniques to civil engineering. Drawing assignments relate to topographical drafting plans and profiles, cuts and fills and municipal sewage systems or rights of way plans. Prerequisite: MECH 140. **3 credits**

PHOT 102 Photo Interpretation and Remote Sensing — Engineers, planners, foresters, geographers, hydrologists, geologists and agriculturists, learn the application and interpretation of aerial photographs and other remote sensor acquired data, as applied to their respective fields. Students develop a working ability in image interpretation from photographic (camera) imagery, near-infrared imagery, thermal infrared imagery and radar imagery. Course covers the application of photographic systems in remote sensing, imaging, non-imaging sensors; the technical elements of image interpretation, imagery interpretation equipment; mapping from remote sensor acquired data, terrain and mineral assessment and evaluation, forest land inventory and assessment, water resources evaluation, soils evaluation and assessment; urban environment inventory and analysis, analysis and application of aerial photos and other remote sensing data to engineering (route location, regional and sit analysis). **7 credits**

PHOT 217 Photogrammetry 1 — Introduces students to the mechanics of photogrammetry through a combination of theory and practical work. Topics include introduction to photogrammetry; photo interpretation; mapping from photographs; cameras; flight planning for vertical photography; mosaics, principle of stereovision; determination of height from aerial photos; radial line plotting; oblique photogrammetry, plotting instruments, stereoscopes, photographic laboratory procedures, analytical photogrammetry; tilted photogrammetry; determination of ground co-ordinates from measurements on photos; supplementing ground survey control; card punching for computer; running a program for co-ordinates; adjusting and trouble-shooting program elements and an introduction to aerial triangulation. **7 credits**

PHYS 131 Physics 1 Part 1 — Topics include kinematics, statics, linear and rotational dynamics, properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable). **3 credits**

PHYS 132 Physics 1 Part 2 — Topics include properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to

various consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable) and PHYS 131. **3 credits**

PHYS 133 Physics 2 Part 1 — Physics 2, with Physics 1, satisfies the knowledge required in various engineering and related technologies. Topics include sound, light, basic electricity and magnetism, basic semiconductor theory, atomic and nuclear phenomena. Mathematical treatment requires algebra and trigonometry and possibly some calculus. Prerequisite: PHYS 132. **3 credits**

PHYS 134 Physics 2 Part 2 — See PHYS 133. Prerequisite: PHYS 133. **3 credits**

SURV 108 Engineering Survey — Covers the basic use of levels — open plate and optic transits, tape measurement methods of horizontal distance and direction determination. Computations:slope reduction, open and closed traverse calculations, benchmark levelling, steel and tape correction techniques, electronic distance measurements, stadia work, tachometers, route surveys, earth work, site work, construction control. Upon completion, students can use a variety of survey instruments and office procedures, and make plans, profiles and maps to determine precise sizes, shapes and locations. **7 credits**

SURV 112 Survey Computations 1 — Topics include basic trigonometric functions, algebra and geometry; operation of an electronic calculator; field measurement calculations of chained distances and levelling notes; solution of right and oblique triangles, bearings — magnetic quadrantal and full circle; traverse calculations, polar and rectangular co-ordinates, omitted measurements; adjustments of traverses; area by co-ordinates and DMD's; subdivision of areas; simple circular curves; areas of irregular areas, volumes of regular and irregular solids; stadia calculations; setting out and design calculations; basic UTM integrated traverse calculations. **7 credits**

SURV 118 Programmable Calculators — Covers two aspects of the programmable calculator; manual use: the use of built-in functions, storage registers, the stack, stack manipulation and register manipulation; programming: using the memory of the machine to "remember" algorithms to solve particular problems. Also covered are flowcharts, programming techniques, subroutines, looping, controlled looping, conditional tests and indirect operations. Appropriate models of calculators for course will be confirmed by instructor. **3 credits**

SURV 215 Engineering Graphics: Programming Concepts — An understandable and comprehensive presentation of the mathematical formulations and algorithms used in the creation of computer graphics software. **3 credits**

SURV 311 Survey Computations 2 — Deals with curves in engineering surveying and covers the following topics: rectangular and polar co-ordinates, transformation of co-ordinates, omitted parts in closed traverses; circular, reverse and compound curves, special problems of circular curves. Prerequisite: SURV 112 **3 credits**

SURV 313 Field Survey — Includes highway surveying; layout of centre line, circular, spiral and vertical curves; topographic surveys by ground survey methods; preparation of topographic plans; mining surveys; use of gyro theodolite. Horizontal control by triangulation, trilateration and traverse, direction measurement, use of precise instruments; vertical control — trigonometric levelling, precise differential levelling; electronic distance measurement; calibration of instruments; hydrographic surveying; horizontal and vertical shore control; tide measurements; sounding methods; preparation of charts. Prerequisite: SURV 108. **7 credits**

SURV 320 Land Use Control — Studies land use and regulation, for those interested in land control. Of particular interest to those involved in municipal engineering and planning departments, surveyors, appraisers, developers, real estate agents and construction departments of utility companies. This course describes how the development and subdivision of land is controlled in B.C. and how regulated use of the basic resource impacts on our jobs, lives and the environment. The approach is primarily technical, with emphasis on the means of control. Specific Provincial statutes, including the Municipal Act and the Land Registry Act and Municipal Regulations, such as zoning and subdivision bylaws, are reviewed. Land values, factors affecting their change, and the part that they play in providing a base for municipal revenue, are considered. Practical aspects of land use control are illustrated by examples of specific subdivision and development schemes. **3 credits**

SURV 358 Introduction to Hydrographic Surveying (Theory) The general principles and requirements of hydrography; obtaining, positioning and reducing soundings; tides and water levels; electromagnetic wave propagation; classifications,calibration and accuracy lobes of electronic positioning systems; propagation of sound in water; acoustic positioning; echo sounders and side scan sonar; nautical charts, their types and uses. **3 credits**

SURV 362 Geodetic Surveying 1 — Properties of the ellipse and ellipsoid of revolution; calculation of radii of curvature; spherical excess; Legendre's theorem, method of addends. Field test; triangle closures, side equations, sine consistency computation of geodetic position, forward and inverse. Trigonometric levelling; reciprocal, non-reciprocal, refraction, intervisibility problems. Prerequisite: MATH 204 recommended. **3 credits**

SURV 363 Adjustment of Survey Measurements — An introduction to the appreciation of least squares in surveying. Topics include matrix algebra, theory of probability and statistics, errors of measurements, covariance matrix, parametric adjustment (levelling net, transformation of co-ordinates, control survey net), conditional observations (levelling net, traversing, control survey net), combined method (traversing nets). Prerequisite: SURV 311, and a course in linear algebra and BASIC for microcomputers is desirable. **3 credits**

SURV 365 Drafting and Survey CAD — Topics include sequential files, string manipulation, microcomputer graphics, role of CAD in surveying, BASIC and FORTRAN programming for plotters and digitizers, data collector transfers, reduction of field data, coordinate geometry programs, creation of plot files. Survey or general requirements for survey plans, inking. Prerequisite: MECH 216 and must have some knowledge of a programming language or permission of instructor. **2 credits**

SURV 410 Survey Computations 3 — Covers vertical and transition curves in engineering surveying and computations for local control surveys. Other topics include concept of geometric space (simple and conformal plane), UTM coordinates, triangulation and trilateration, reduction of field observations (eccentric measurements, mean-sea-level reduction), field consistence checks, intersection, resection (Snellius and D'Alamber solutions), inaccessible base, traversing in control survey, adjustments by semi-rigorous methods and least squares. Prerequisite: SURV 311. **3 credits**

SURV 411 Survey Computations 4 — Covers numerical methods in surveying computations; Newton's method and the solution of non-linear equations; partitioning of land with curved boundaries; systems of heights; computations with differential levelling; orthometric correction; consistency checks and simple adjustments; trigonometric levelling; barometric levelling; three dimensional surveying systems; spatial traverses; deformation meas-

urements and statistical assessments; computation of areas and volumes. Prerequisite: SURV 410. **3 credits**

SURV 426 Astronomy 1 and 2 — An introduction to astronomy as used by surveyors. Of particular interest to persons intending to write the Professional Land Surveyor examinations. Through the use of the BCIT planetarium facilities, students gain a good grounding in star identification. The course includes an introduction to practical astronomy, the celestial sphere, the astronomical triangle; universal time, mean solar time, sidereal time and star almanacs; instruments used in solar and stellar observations; star identification; observations for latitude, time and longitude, azimuth and position. Prerequisite: MATH 204 recommended. **7 credits**

SURV 463 Mathematical Cartography — Theory of map projections and distortions, classification of projections; conic, cylindric and azimuthal systems. Universal Transverse Mercator projection and all involved computations. Stereographic projection for the maritime provinces. Polyconic projection of British Columbia. Prerequisite: SURV 362. **5 credits**

SURV 465 Survey CAD 2 — Continuation of SURV 365. **4 credits**

LAND SURVEYORS (B.C.) REFRESHER COURSES

A series of one day, non credit, refresher courses for Articled Students to B.C. Land Surveyors, who are writing their final or professional exams.

SURV 968	Description for Deeds
SURV 969	Planning
SURV 970	Land Title Acts

Course Descriptions

SURV 968 Description for Deeds - A refresher course for Articled Students to B.C. Land Surveyors, who are writing their final exams. **non credit**

SURV 969 Planning - A refresher course for Articled Students to B.C. Land Surveyors, who are writing their final exams. It is recommended that the participants have a copy of "Guide to Planning and Land Development" by J. Connelly. **non credit**

SURV 970 Land Title Acts - A refresher course for Articled Students to B.C. Land Surveyors, who are writing their final exams. **non credit**

Transportation Systems (Highways) Technology

Ron Isaak, Dipl.T., A.Sc.T., Program Coordinator
Telephone (604) 432-8607
Mike Boyle, B.Eng., M.I.C.E., C.Eng., P.Eng.,
Course Writer Developer, on leave
Shari Monsma, Program Assistant
Telephone (604) 432-8784
Program Advisor
Telephone: 432-8467

The Transportation Systems (Highways) Technology program, jointly developed with the Ministry of Transportation and Highways, provides opportunities in Civil Highways Technology for distance education learners through correspondence credit courses. Many courses are also accepted for credit in the Civil and Structural Program. All programs consist of technology courses and mandatory core subjects. Experienced students can apply for experiential learning or skill competency credit in some courses. For the Intermediate Certificate or Certificate of Technology in Transportation Systems (Highways) Technology, courses are now available, with course development nearing completion for the full Diploma of Technology Program.

Students are advised to complete subject area courses in sequence; however, registration in individual courses is open, based on a student's self-assessment of need, application and capability.

For an information package, course outlines or registration details write to: Transportation Systems Department, 3700 Willingdon Avenue, Burnaby, B.C. V5G 3H2

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN TRANSPORTATION SYSTEMS (HIGHWAYS) TECHNOLOGY

Mandatory Courses		Credit
TSYH 101	Introduction to Technical Communication Part 1	2.O
TSYH 102	Introduction to Technical Communication Part 2	2.0
TSYH 129	Network Analysis	3.0
TSYH 140	Hydrology Part 1	2.0
TSYH 142	Hydrology Part 2	1.0
TSYH 150	Strength of Materials Part 1: Forces on Systems	2.0
TSYH 151	Strength of Materials Part 2: Stress-Strain	3.0
TSYH 160	Graphical Communication Part 1: Basic Drafting	2.0
TSYH 201	Soils Technology Part 1: Basic Properties	2.0
TSYH 206	Soils Technology Part 3: Field Investigation	3.0
TSYH 220	Aggregates Part 1: Basic Properties	1.0
TSYH 230	Concrete Technology Part 1: Basic Properties	1.0
TSYH 240	Asphalt Technology Part 1: Basic Properties	1.0
TSYH 301	Surveying Fundamentals Part 1: Basic Instrumentation	1.0
TSYH 302	Surveying Fundamentals Part 2: Methods and Procedures	2.0
TSYH 303	Surveying Fundamentals Part 3: Basic Computations	2.0
TSYH 304	Surveying Fundamentals Part 4: Field Applications	1.0
TSYH 501	Highway Design Part 1: Basic Design Data	2.0
TSYH 530	Subdivision Planning-Design Part 1: Land Use Planning	2.0

CERTIFICATE OF TECHNOLOGY IN TRANSPORTATION SYSTEMS (HIGHWAYS) TECHNOLOGY

Prerequisite: Intermediate Certificate in Transportation Systems (Highways) Technology

		Credit
TSYH 103	Reporting Technical Information	2.0
TSYH 143	Hydrology Part 3: Rational Method Application	1.0
TSYH 145	Hydraulics Part 1: Fundamentals of Fluids	2.0
TSYH 146	Hydraulics Part 2: Flow Under Pressure	1.0
TSYH 147	Hydraulics Part 3: Flow in Open Channels	1.0
TSYH 152	Strength of Materials Part 3: Resistance of Materials	1.0

		Credit
TSYH 153	Strength of Materials Part 4: Testing Practices and Analysis	1.0
TSYH 162	Graphical Communication Part 2: Interpreting Topographical Drawings or	
TSYH 165	Graphical Communication Part 3: Interpreting Construction Drawings	3.0
TSYH 203	Soils Technology Part 2: Engineering Properties	3.0
TSYH 209	Soils Technology Part 4: Testing Practices	1.0
TSYH 221	Aggregates Part 2: Production and Quality Control	1.0
TSYH 222	Aggregates Part 3: Testing Practices	1.0
TSYH 231	Concrete Technology Part 2: Mix Design	2.0
TSYH 232	Concrete Technology Part 3: Placing or	1.0
TSYH 241	Asphalt Technology Part 2: Mix Design	2.0
TSYH 242	Asphalt Technology Part 3: Testing Practices	1.0
TSYH 310	Surveying Site Control	3.0
TSYH 311	Surveying Highways Part 1: Horizontal Alignment	2.0
TSYH 312	Surveying Highways Part 2: Vertical Alignment	1.0
TSYH 314	Surveying Highways Part 3: Field Applications	1.0
TSYH 315	Surveying Quantity Measurement	1.0
TSYH 450	Estimating Part 1: Quantity Take-off	2.0
TSYH 453	Estimating Part 2: Costing	2.0
TSYH 460	Contracts Part 1: Types of Contracts and Contract Documents	2.0
TSYH 461	Contracts Part 2: Cost Control	2.0
	Computer Course Electives	3.0

DIPLOMA OF TECHNOLOGY IN TRANSPORTATION SYSTEMS (HIGHWAYS) TECHNOLOGY

Prerequisite: Certificate of Technology in Transportation Systems (Highways) Technology

		Credit
TSYH 104	Writing Analytical Reports	2.O
TSYH 105	Management Communications	4.0
TSYH 120	Technical Mathematics Part 1	3.0
TSYH 123	Technical Mathematics Part 2	3.0
TSYH 126	Statistics Part 1	1.0
TSYH 127	Statistics Part 2	2.0
TSYH 128	Statistics Part 3	2.0
TSYH 162	Graphical Communication Part 2: Interpreting Topographical Drawings or	
TSYH 165	Graphical Communication Part 3: Interpreting Construction Drawings	3.0
TSYH 199	Technical Report	6.0
TSYH 210	Geotechnical Design Part 1: Earth Slope Stability	2.0
TSYH 212	Geotechnical Design Part 1: Rock Slope Stability	2.0
TSYH 214	Geotechnical Design Part 3: Foundations	2.0
TSYH 216	Geotechnical Design Part 4: Retaining Structures	2.0
TSYH 231	Concrete Technology Part 2: Mix Design	2.0
TSYH 232	Concrete Technology Part 3: Placing or	1.0
TSYH 241	Asphalt Technology Part 2: Mix Design	2.0
TSYH 242	Asphalt Technology Part 3: Testing Practices	1.0
TSYH 502	Highway Design Part 2: Route Selection	4.0
TSYH 507	Highway Design Part 3: Earthworks	3.0
TSYH 510	Highway Design Part 4: Drainage and Culvert Design	4.0
TSYH 520	Pavement Design Part 1: Design Criteria	2.0
TSYH 522	Pavement Design Part 2: Specifications	2.0
TSYH 532	Subdivision Planning-Design Part 3: Urban Street Design	2.0
TSYH 535	Subdivision Planning-Design Part 3: Storm Sewers	2.0
TSYH 537	Subdivision Planning-Design Part 4: Water Supply and Sanitary Sewers	2.0
TSYH 540	Subdivision Planning-Design Part 5: Subdivision Layout	2.0
TSYH 560	Traffic Technology Part 1: Traffic Characteristics	1.0
TSYH 561	Traffic Technology Part 2: Data Collection and Traffic Control	1.0
TSYH 562	Traffic Technology Part 3: Traffic Characteristics	1.0
TSYH 563	Traffic Technology Part 4: Parking and Loading	1.0
TSYH 570	Structural Design Part 1: Forces on Structures	1.0
TSYH 571	Structural Design Part 2: Internal Forces	2.0
TSYH 580	Transportation Planning Part 1	2.0
TSYH 582	Transportation Planning Part 2	2.0
	Elective Credits	4.0

Optional, Elective and Advanced Courses

These courses may be substituted in a program, with approval.

		Credit
TSYH 132	Calculus Part 1	2.0
TSYH 134	Calculus Part 2	2.0
TSYH 136	Calculus Part 3	2.0
TSYH 168	Graphical Communication Part 4: Structural Steel Detailing	2.0
TSYH 170	Graphical Communication Part 5: Reinforcing Steel Detailing	2.0
TSYH 180	Computers Part 1: Introduction to Data Processing	2.0
TSYH 313	Mapping Systems and Route Reconnaissance	1.0
TSYH 330	The Legal Surveying System	1.0
TSYH 335	Basic Field Astronomy	2.0
TSYH 401	Highway Construction Part 1: Clearing and Excavation	1.0
TSYH 402	Highway Construction Part 2: Earthmoving	1.0
TSYH 403	Highway Construction Part 3: Compaction and Stabilization	1.0
TSYH 404	Highway Construction Part 4: Culvert and Drainage Installation	2.0
TSYH 572	Structural Design Part 3: Basic Timber Design	2.0
TSYH 574	Structural Design Part 4: Basic Reinforced Concrete Design	2.0
TSYH 576	Structural Design Part 5: Basic Structural Steel Design	2.0

Course Descriptions

TSYH 101 Introduction to Technical Communication Part 1 — This course lays the groundwork for learning how to assemble material in order to communicate effectively in writing. It is presented in two parts so students can master good writing techniques before applying them specifically to letters, memos, etc. **2 credits**

TSYH 102 Introduction to Technical Communication Part 2 — Applies the techniques learned in TSYH 101 to specific forms of written communication. **2 credits**

TSYH 103 Reporting Technical Information — A mandatory course for students in the Diploma Program. It covers all aspects of report writing: organizing information, presentation, drawing conclusions, packaging. Students will be required to submit assignments for assessment and constructive criticism. **2 credits**

TSYH 104 Writing Analytical Reports — A mandatory course for students in the Diploma Program. It covers all aspects of analytical report writing: organizing information, presentation, drawing of conclusions, packaging. Students will be required to submit assignments for assessment and constructive criticism. **2 credits**

TSYH 105 Management Communications — Emphasis is on the public relations aspect of communications. Students will develop the ability to conduct meetings and deal with the public on a formal basis. They will also extend their writing skills to the preparation of contract documents and position papers. Part of the course will be presented in seminar form using confrontational situations for individual or group solution. (Available Spring 1989.) **4 credits**

TSYH 120 Technical Mathematics Part 1 — The first of two courses in technical mathematics which is mandatory for those in the Diploma Program. The course builds on high school mathematics material so students are able to relate basic algebra, trigonometry, geometry and vectors to their technical field. Through working examples, students develop the ability, confidence and versatility to deal with physical situations involving mathematical solutions. **3 credits**

TSYH 123 Technical Mathematics Part 2 — The second of two courses in technical mathematics, as described in TSYH 120. **3 credits**

TSYH 126 Statistics Part 1 — The first of three courses designed to familiarize students with the underlying principles, concepts and terminology of descriptive and inferential statistics. Students will learn to intelligently read, interpret and question the validity of statistical data presented in reports, magazines and journals. They will be able to use elementary statistical procedures to collect, summarize, analyze and interpret statistical data after course completion. The course is recommended for those involved in the collection or interpretation of traffic flow data, material test results or project planning. **1 credit**

TSYH 127 Statistics Part 2 — A continuation of TSYH 126. **2 credits**

TSYH 128 Statistics Part 3 — A continuation of TSYH 127. **2 credits**

TSYH 129 Network Analysis — An introduction to the mathematics involved in operations research. Course includes linear programming, transportation, assignment and queueing theory; and their applications in the decision-making process. **3 credits**

TSYH 132 Calculus Part 1 — The first of three courses in calculus dealing with differentiation and integration of algebraic expressions and some trigonometric, logarithmic and exponential functions. Additional topics include conic and calculus problems, and partial differentiation. (Available Fall 1988.) **2 credits**

TSYH 134 Calculus Part 2 — A continuation of the series in calculus. (Available Fall 1988.) **2 credits**

TSYH 136 Calculus Part 3 — A continuation of the series in calculus. (Available Fall 1989.) **2 credits**

TSYH 140 Hydrology Part 1: Introduction to Hydrology — Provides a working knowledge of the terminology used in hydrology. Methods of determining watershed boundary areas, evaluating watershed characteristics for run-off estimation, precipitation measurement, streamflow measurement, calculation of flows and stream gauging are covered in preparation for TSYH 142 and 143. **2 credits**

TSYH 142 Hydrology Part 2: Flood Flow Determination — Introduces the primary methods of determining flood flows through the analysis of existing and obtainable data, including the Rational Method, streamflows, point flow frequencies and snowmelt. Method selection, probability calculation, determination of return periods, and probable flood flows based on the analysis of existing data are presented for practical use in the design of drainage structures based on estimated flood flow magnitudes. **1 credit**

TSYH 143 Hydrology Part 3: Rational Method Application — An expansion of TSYH 142. A step-by-step application of the Rational Method in peak flow determinations is presented. Students will work on individual projects and follow a systematic approach to determining peak flows using the Rational Method as a basis for culvert and drainage designs. **1 credit**

TSYH 145 Hydraulics Part 1: Fundamentals of Fluids — An introduction to the terminology, physics and applications of hydrostatics and hydraulics. This course covers fluids at rest and in motion. Topics include: the properties of water, fluid pressure, hydrostatic force and buoyancy; fundamental laws of incompressible fluid flow; concepts of continuity, momentum, force, energy, power and work as they relate to hydraulic systems. Some basic concepts of pumps are also introduced. (Available Fall 1988.) **2 credits**

TSYH 146 Hydraulics Part 2: Flow Under Pressure — A look at the fundamentals of fluid flow as it applies to pressurized pipe systems. Both small and large scale pipe networks and the head losses generated are examined. Also included are simple and complex networks, the concept of equivalent pipes and the analytical technique called the Hardy Cross Method for solving systems with multiple branches. (Available Fall 1988.) **1 credit**

TSYH 147 Hydraulics Part 3: Flow in Open Channels — This course discusses normal and critical flow in open channels; the effects of erosion; changes in channel shape and variations in slope on the flow profile; backwater conditions. Simple hydraulic structures such as weirs and culverts are introduced and their affect on flow pattern is illustrated. (Available Fall 1988.) **1 credit**

TSYH 150 Strength of Materials Part 1: Forces on Systems — The first of four courses on "strength of materials". This course covers the basic principles of statics including forces generated by applied and gravitational loads; how to establish the resultant of these forces, break them down into components and calculate the axial resisting forces maintaining equilibrium. **2 credits**

TSYH 151 Strength of Materials Part 2: Stress-Strain — Concentrates on the analysis of stresses in frames, trusses and columns and the relationship between stress and strain, in preparation for further study of connections in steel and timber members. The properties of structural shapes are introduced preparatory to introducing design theory. **3 credits**

TSYH 152 Strength of Materials Part 3: Resistance of Materials — Builds on the foundation laid in TSYH 150 and 151, and completes the basic theory of the behavior of simple members under load. It is intended as a transition for more advanced structural courses, and as a preparatory for TSYH 153. **1 credit**

TSYH 153 Strength of Materials Part 4: Testing Practices and Analysis — Reinforces the concepts learned in TSYH 152 by illustrating the properties and relationships of stress and strain in laboratory conditions. Laboratory tests will be recorded on video.

Students will observe and record results for analysis of data and demonstration of the stress-strain relationships for various materials. (Available Spring 1989.) **1 credit**

TSYH 160 Graphical Communication Part 1: Basic Drafting — Students will be introduced to the standard layout of engineering drawings. Topics include the relationship between plans, elevations, sections, etc.; conventional lining and lettering techniques; the development of projected views. Special consideration will be given to sketching techniques and, through assignment preparation, the student will acquire basic drafting ability. **2 credits**

TSYH 162 Graphical Communication Part 2: Interpreting Topographical Drawings — Presents the required elements for reading and preparing drawings conveying survey data, drawing layout in plan and profile form, site development, and computations related to topographical data and highway design. **3 credits**

TSYH 165 Graphical Communication Part 3: Interpreting Construction Drawings — A companion course to TSYH 162 dealing with construction drawings for highways, bridges, culverts, retaining structures and other auxiliary works. **3 credits**

TSYH 168 Graphical Communication Part 4: Structural Steel Detailing — A specialized course providing the basis for reading structural steel engineering drawings and identifying members for size, type and location. Includes layout of connections for beams, columns and bracing, in preparation for fabrication drawings. **2 credits**

TSYH 170 Graphical Communication Part 5: Reinforcing Steel Detailing — Provides the basis for reading reinforcing steel engineering drawings and identifying patterns of reinforcing bars in various reinforced concrete structural members. Students prepare schedules and calculate total quantities and weights of bars in slabs, beams, columns and walls, from design drawings. **2 credits**

TSYH 180 Computers Part 1: Introduction to Data Processing — An introductory course in the use of computers as a means of processing data. It covers the hardware and software currently in use and provides the background knowledge necessary to overcome initial fear of computers. **2 credits**

TSYH 190 Guide to Technical Report Writing — A non credit course to assist students to write technical reports for TSYH 199, a requirement for the Diploma Program. Subjects include format, alternative comparisons, research and references, presentation of economic data, persuasive writing, and the development of conclusions. **non credit**

TSYH 199 Technical Report — Diploma Program students are required to submit a technical report, 3000 to 5000 words long. It is normally the finale of the Diploma Program and enables students to demonstrate their ability in presenting technical data in logical form. Report topics may be from any area of the student's work associated with the general field of Transportation Systems (Highways). Students initially submit a preliminary outline of their report for assessment and approval by a tutor familiar with the technological area. Then the final report is analysed and assessed for accuracy and form of presentation by the tutor and the Communications Department. **6 credits**

TSYH 201 Soils Technology Part 1: Basic Properties — Provides an introduction to the terminology, theory and practices related to geology, soil mechanics and basic properties of soils. The course discusses natural processes that take place in the formation of soils and rocks; describes rock identification charts used in industry and covers simple field identification tests. Laboratory tests used to define soil properties that classify soil (in accordance with the Unified Soil Classification System) are identified. **2 credits**

TSYH 203 Soils Technology Part 2: Engineering Properties — Describes the soil properties that are used in the design of engineering structures. Areas covered: basic principles and effects of water movement through soils; calculation of combined stresses in soil masses; settlement and consolidation; concepts of shear strength in soils. **3 credits**

TSYH 206 Soils Technology Part 3: Field Investigation — Details reasons and methods for conducting a geotechnical survey. Office procedures are introduced which allow geotechnical information to be obtained before moving into the field. Field aspects of a geotechnical survey, including location methods and simple survey techniques for sizing material deposits, are presented. Information required from a preliminary field reconnaissance and methods used (and relative costs) in a detailed investigation are also covered. Sampling methods and current "in-situ" tests are fully discussed. **3 credits**

TSYH 209 Soils Technology Part 4: Testing Practices — Introduces the advantages-disadvantages of laboratory soil testing and describes the methods required when receiving, recording, handling, storing and testing soil samples. Common laboratory tests are described and explained; sample calculations for test data are given. Access to a local laboratory will be required to demonstrate testing practices. **1 credit**

TSYH 210 Geotechnical Design Part 1: Earth Slope Stability — Introduces the mechanics of slope movement and causes of slope instability including identification of potential slope hazards. Analysis of translational and rotational failures; use of stability charts; design and remedial measures are covered. (Available Fall 1988.) **2 credits**

TSYH 212 Geotechnical Design Part 2: Rock Slope Stability — Introduces the basic mechanics of rock slope failures and the principles needed to analyse planar failures. Topics include methods of rock slope stabilization, rockfall protection and detection, required calculations and design applications. (Available Spring 1989.) **2 credits**

TSYH 214 Geotechnical Design Part 3: Foundations — Introduces terminology, theory and concepts associated with foundation analysis and design. Topics include types of foundations, related subsoil conditions, bearing capacities, settlement of shallow foundations, bearing capacity of deep foundations and site soil improvement using stabilization methods.(Available Spring 1989.) **2 credits**

TSYH 216 Geotechnical Design Part 4: Retaining Structures — Introduces theory and terminology related to the analysis and design of earth retaining structures together with practical design applications. Topics include lateral earth pressure theory, stability requirements of retaining wall designs, tie rods, wall types, selection and design.(Available Spring 1989.) **2 credits**

TSYH 220 Aggregates Part 1: Basic Properties — An introduction to the sources, types and qualities of aggregates, and the methods used to find them. Applications of aggregates and the codes governing them are discussed. **1 credit**

TSYH 221 Aggregates Part 2: Production and Quality Control — Describes the operations and capabilities of different types of crushing plants: jaw crushers, roll crushers, cone crushers, impact crushers, tandem crushing units. Topics include screening capacities; calculated output; the ability of production systems to meet aggregate requirements; quality control inspection procedures; methods of correcting gradation defects resulting from production-stockpiling; the need for safety in all aspects of production. (Available Fall 1988.) **1 credit**

TSYH 222 Aggregates Part 3: Testing Practices — Describes the procedures used to obtain representative samples for testing. Testing procedures (including selection and preparation of equipment), performance, record keeping and result analysis for sieve analysis, specific gravity, absorption, abrasion, chemical soundness and petrographic analysis are covered. Access to a laboratory will be required to demonstrate competency in testing procedures. **1 credit**

TSYH 230 Concrete Technology Part 1: Basic Properties — The production of Portland cement concrete is discussed in general terms. The various components used in the manufacture of concrete are detailed including a description of their production, possible defects or impurities, and the correct method of storing materials. **1 credit**

TSYH 231 Concrete Technology Part 2: Mix Design — In accordance with C.S.A. A23.1 Section 14, students will be instructed on the effects of the placing method, use of admixtures and variations of cement type in the design of mixes. A step-by-step design approach will be demonstrated, based on the design criteria and moisture content of the aggregates, and procedures in the preparation of trial batches and the interpretation of their results. (Available Fall 1988.) **2 credits**

TSYH 232 Concrete Technology Part 3: Placing — Stresses the necessity for adequate equipment and manpower planning to ensure quality concrete products. The process from formwork preparation to final curing is discussed. Topics include correct batching, mixing, transporting, placing-vibrating, finishing and protection methods for concrete during the curing process. (Available Fall 1988.) **1 credit**

TSYH 233 Concrete Technology Part 4: Testing Practices — Describes the initial testing performed on concrete including slump, air entrainment, unit weight and temperature. Topics include maintenance and calibration of test equipment; procedures for preparing and curing samples; capping and testing compression cylinders; preparing and conducting flexural tests; interpreting test results. Students are advised of the problem areas in concrete preparation and placing that should be inspected, and the appropriate actions to be taken in the event of nonconformance with specifications. Access to a local laboratory will be required to demonstrate competency in the testing practices. (Available Spring 1989.) **1 credit**

TSYH 240 Asphalt Technology Part 1: Basic Properties — The first of three courses to introduce the field of asphalt technology including the basic properties of asphaltic cements, liquid asphalts and aggregates. This is an entry level course but students are advised to complete TSYH 220 as a prerequisite. **1 credit**

TSYH 241 Asphalt Technology Part 2: Mix Design — Commences with the proportioning of asphalt mixes including the analysis and calculations required to determine the physical properties of the mix. Step-by-step procedures are given for mix design including the methodology, test specimens, procedures and interpretation of test data for two mix design methods. Fundamentals of manufacturing hot-asphalt mixes (storage, mixing methods, mixing plants, production, inspection) are covered, including hot-mix recycling and special mix designs. (Available Fall 1988.) **2 credits**

TSYH 242 Asphalt Technology Part 3: Testing Practices — Presents methods and procedures for conducting relevant tests on asphalt cement and liquid asphalts. Preparing test specimens and recording and analysing test data in compliance with specifications are discussed. Access to a laboratory will be required to demonstrate competency in the testing practices.(Available Fall 1988.) **1 credit**

TSYH 301 Surveying Fundamentals Part 1: Basic Instrumentation — A fundamental course in surveying which introduces commonly used survey equipment. After completion, students will be able to identify and describe the equipment, parts and applications in the field. **1 credit**

TSYH 302 Surveying Fundamentals Part 2: Methods and Procedures — A continuation of TSYH 301. This course details the field and office methods used for measuring and recording surveying data. Topics include booking and plotting notes, measuring angles and distances, basic computations for angles, level note reduction, simple circular curves, simple traverse plots, plans, profiles, cross sections and slope staking. **2 credits**

TSYH 303 Surveying Fundamentals Part 3: Basic Computations - A continuation of TSYH 302. This course takes data obtained from field surveys and details the computations involved with planning and design. Topics include elements of coordinate geometry, traversing slope reduction, trigonometric levelling, stadia reduction and coordinate transformation. (Available Fall 1988.) **2 credits**

TSYH 304 Surveying Fundamentals Part 4: Field Applications — The last of four courses in surveying fundamentals, this course allows students to obtain credit for applying their skill with basic instruments and theory, learned in TSYH 301, 302 and 303, to practical applications. Students will be required to demonstrate to the satisfaction of an approved evaluator, their ability in chaining procedures, leveling, transit work, use of electronic distance measuring equipment. **1 credit**

TSYH 310 Surveying Site Control — Computations related to horizontal and vertical positioning and an introduction to three specific aspects of datum and control systems are provided in this course. Topics include geodetic horizontal datum and ellipsoidal datum reductions; quality control and concepts of confidence; the use, calculation and coordinate transformation to UTM coordinate systems; methods, calculations and selection of procedures for implementing site survey control. **3 credits**

TSYH 311 Surveying Highways Part 1: Horizontal Alignment — The first of three courses covering the theory and computations involved in highway surveying computations and layout. Topics include horizontal alignment procedures and calculations, simple circular curves, compound and reverse curves and transition curves. **2 credits**

TSYH 312 Surveying Highways Part 2: Vertical Alignment — The second of three courses covering the theory and computations involved in highway surveying computations and layout. Topics include vertical alignment procedures and calculations, and vertical parabolic curves (symmetrical and asymmetrical). **1 credit**

TSYH 313 Mapping Systems and Route Reconnaissance — An introduction to mapping systems used in British Columbia and the relationship between mapping and preliminary surveys. Aerial photography, ground surveys, mapping coverage and an introduction to the use of computer-aided drafting in surveying and mapping are presented. **1 credit**

TSYH 314 Surveying Highways Part 3: Field Applications — The last of three courses on highway surveying computations and layout, this course allows students to obtain credit for their skill in applying theory learned in TSYH 311 and 312 to practice. Students will be required to demonstrate to the satisfaction of an approved evaluator, their competency in a series of surveying tasks related to vertical and horizontal survey computations and layout. **1 credit**

TSYH 315 Surveying Quantity Measurement—An introduction to the standard methods used in measuring and calculating land area and earthwork quantities. Area and volume formulas; typical highway applications; an introduction to accumulated volume computations; shrinkage and swell factors; and adjustments and elementary Mass-Haul analysis are presented. **1 credit**

TSYH 330 The Legal Surveying System — An introduction to the systems of legal surveying, monumentation requirements and regulations currently in practice in British Columbia. Topics include general survey principles, land registration, monumentation, sources of survey information, systems of survey, Land Act, Land Titles Act, Highways Act, Surveyor-General Regulations, and highway and railway survey requirements. **1 credit**

TSYH 335 Basic Field Astronomy — An introduction to astronomy, the course presents the terms, symbols and calculations to compute the azimuth of a line and latitude of a point based on polar and solar observations. The course manual provides the conceptual and theoretical basis for completing an assignment which requires computations from local observations. **2 credits**

TSYH 401 Highway Construction Part 1: Clearing and Excavation — An introduction to the terminology, theory, equipment and practices used in clearing, grubbing and excavation operations. The course covers the basic reasons for clearing and grubbing; terminology; inspection and quality control requirements; soil properties and how they affect excavation; methods used in maintaining and protecting excavated surfaces; capabilities of standard excavation equipment. Emphasis is placed on productivity and safety. Special reference is made to quantity measurements and specifications used in highway construction. (Available Spring 1989.) **1 credit**

TSYH 402 Highway Construction Part 2: Earthmoving — A general introduction to types of earthmoving equipment and engineering fundamentals of earth hauling machinery. Topics include various earthmoving methods, factors involving equipment selection, and productivity. (Available Spring 1989.) **1 credit**

TSYH 403 Highway Construction Part 3: Compaction and Stabilization — A course on the methods and equipment used in preparing highways for paving based on soil properties. Inspection and control, proctor and nuclear density, sand and balloon density tests are included. (Available Spring 1989.) **1 credit**

TSYH 404 Highway Construction Part 4: Culvert and Drainge Installation — Provides an introduction to the terminology, theory and practices of culvert and drainage installation for highway projects. Particular reference is made to industry specifications for subdrainage and storm sewer system installation. (Available Fall 1988.) **2 credits**

TSYH 450 Estimating Part 1: Quantity Take-off — Prepares students to take off quantities from construction drawings in order to prepare bills of quantities, verify progress drawings and establish a base for costing. Software packages for computerized take-off systems will be discussed. (Available Spring 1989.)**2 credits**

TSYH 453 Estimating Part 2: Costing — A continuation of TSYH 450. The cost elements of quantities including labor, materials, handling, inventory, overhead, etc., are determined or applied to take-off quantities in preparing estimates and comparing actual costs with estimated costs. (Available Spring 1989.) **2 credits**

TSYH 460 Contracts Part 1: Types of Contracts and Contract Documents — A course covering the types of contracts used in construction: lump sum, unit price, cost plus, turnkey. Topics include contract documentation, instructions to tender, general conditions, special conditions, insurance clauses and specifications from industry. **2 credits**

TSYH 461 Contracts Part 2: Cost Control — This course includes planning, work measurement, record-keeping, progress reports and extras. Recommended methods of field and office control for construction projects are given, with examples from industry. (Available Fall 1988.) **2 credits**

TSYH 501 Highway Design Part 1: Basic Design Data — An introduction to highway classification and the capacity and level of service concepts as defined in the R.A.T.C. Manual. Topics include elements of horizontal and vertical alignment design; components of road cross sections; impact of a new road or road improvement on the environment. **2 credits**

TSYH 502 Highway Design Part 2: Route Selection — An introduction to the development of a highway design from its conception to horizontal and vertical alignment. Survey and mapping requirements and aerial photography are employed in the selection of preliminary alignment, including the detailed horizontal and vertical design of a highway. The course is project-based and requires a detailed design for a section of highway including the selection of radii; superelevation and visibility standards for a particular design speed or road classification; calculation of data for horizontal curves (circular areas and transitional spirals) and vertical curves; calculation of the attainment and removal of superelevation. **4 credits**

TSYH 507 Highway Design Part 3: Earthworks — This course is based on the student project in TSYH 502. Students will be required to complete earthworks quantity data and produce a partial Mass-Haul diagram. After complete project data is submitted, a computer generated unadjusted Mass-Haul diagram will be provided. Adjustments will be required for balanced earthworks (swell, shrinkage, waste, borrow, freehaul, overhaul), and a cost estimate based on established unit prices and the resulting volumes is prepared by each student. **3 credits**

TSYH 510 Highway Design Part 4: Drainage and Culvert Design — A course on high drainage facility design which requires a working knowledge of the principles of hydrology and hydraulics. Topics include hydraulic and structural design elements of culverts, ditches, storm water systems design, surface run-off control, environmental considerations and material specifications. (Available Fall 1988.) **4 credits**

TSYH 520 Pavement Design Part 1: Design Criteria — Highway design requirements for sub-base and base course materials are presented. Design and evaluation techniques will also be studied. Topics include axle loading, repetitions, pressure loading ($P \approx W\text{-}A$), internal angle of friction, allowable sub-grade reaction K, Benkleman Beam, dynaflect testing, plate bearing, photologging and P.M.S. (Available Spring 1989.) **2 credits**

TSYH 522 Pavement Design Part 2: Specifications — A continuation of TSYH 520 where design criteria are applied to determine mix designs for flexible and rigid surfaces. Climatic conditions, industry specifications, materials availability and classification of highway are included, relative to the selected design surface. (Available Spring 1989.) **2 credits**

TSYH 530 Subdivision Planning-Design Part 1: Land Use Planning — Discusses natural state land use assessment, planning elements, community zoning and site plans, neighborhoods, lot and dwelling types, traffic considerations, road classifications, road patterns and names, single site planning, building envelopes, setbacks, lot layout design, cul-de-sacs, walkways and emergency access routes. Acts and Regulations governing subdivisions, the approval process, engineering servicing criteria and the economic aspects of land use development are reviewed. **2 credits**

TSYH 532 Subdivision Planning-Design Part 2: Urban Street Design — The design of urban roads from limited local residential streets to arterial road standards. Horizontal and vertical alignment applications are detailed; consideration is given to drainage and auxiliary facilities such as parking, sidewalks and bus services. A project will require students to incorporate all design elements in preparation for design drawings of a section of urban arterial road. **2 credits**

TSYH 535 Subdivision Planning-Design Part 3: Storm Sewers — The principles of hydraulics and hydrology are applied in preparation for design drawings of enclosed storm water systems. Topics include division of drainage systems into areas and sub-areas; the establishment of vertical and horizontal storm sewer alignments; computation of run-off; calculation and sizing of mains; the design of laterals and service connections. **2 credits**

TSYH 537 Subdivision Planning-Design Part 4: Water Supply and Sanitary Sewers — The principles of hydraulics are applied to the design of water supply and sanitary sewer systems for urban development. Water supply demand, design criteria, flows, losses, appurtenances and network analysis are included to enable students to prepare a supply and distribution system design and analysis, complete with pipe sizing and installation details. Sanitary sewer design topics include recommended design flows, pipe flow formulae and design criteria. System alignments, velocity controls, lot service connections and minimum sizing using the standard design computation tables are included, to enable students to prepare a sanitary system collection design. **2 credits**

TSYH 540 Subdivision Planning-Design Part 5: Subdivision Layout - Incorporates the aspects of land use planning and engineering servicing related to residential subdivision layout design. It is project-based and will require the development of lot layout and servicing alternatives for a raw land parcel including integration with existing development and services. (Available Fall 1988.) **2 credits**

TSYH 560 Traffic Technology Part 1: Traffic Characteristics — Presents the operating characteristics of traffic: vehicle dimensions, weight and performance; driver perception; reaction and braking distances; minimum stopping distance; pedestrian and bicycle characteristics. The course includes traffic stream characteristics including spot speed, travel time, A.D.T. and D.H.V., speed-flow relationship, level of service, queuing theory and highway capacity. **1 credit**

TSYH 561 Traffic Technology Part 2: Data Collection and Traffic Control — A continuation of TSYH 560. Contents include the collection of data by volume counts; the moving vehicle method; speed measurement; licence plate studies; signal location and equipment; signal tuning and phasing; detection loops; computer controlled systems; system management; pedestrian and signal warrants. **1 credit**

TSYH 562 Traffic Technology Part 3: Traffic Characteristics — A continuation of TSYH 561 with emphasis on the design of lane layout, auxiliary lanes, channelization and turning. The types of signals relating to capacity at intersections and the limitation of unsignalized junctions are discussed. **1 credit**

TSYH 563 Traffic Technology Part 4: Parking and Loading — A continuation of TSYH 562 with emphasis on the geometric design of off-street parking, loading facilities, parking garages, bus and truck terminals, on-street parking, the use of parking studies and shopping centre layouts. **1 credit**

TSYH 570 Structural Design Part 1: Forces on Structures — The structural design series are a continuation of TSYH 150, 151, 152 and 153. This course details the external forces applied to structures including environmental forces; live loads from equipment, vehicles and human occupancy; design factors and code requirements. (Available Spring 1989.) **1 credit**

TSYH 571 Structural Design Part 2: Structural Analysis — The first part of this course continues shear force and bending moment diagram development from TSYH 151 including an introduction to statically indeterminate structures. The second part analyses statically indeterminate structures by moment distribution in preparation for computer analysis methods. (Available Spring 1989.) **2 credits**

TSYH 572 Structural Design Part 3: Basic Timber Design — An introductory course for the design of both timber columns and beams by limit states including timber connections. (Available Spring 1989.) **2 credits**

TSYH 574 Structural Design Part 4: Basic Reinforced Concrete Design — Applies the theory of concrete technology to the design of reinforced concrete structures such as bridge decks and retaining walls, with emphasis on reinforcement location and adherence to safe design standards. (Available Spring 1989.) **2 credits**

TSYH 576 Structural Design Part 5: Basic Structural Steel Design — Introduces the design theory of structural steel members and welded, bolted and riveted connections. Emphasis will be placed on erection practices and connection details.(Available Spring 1989.) **2 credits**

TSYH 580 Transportation Planning Part 1 — Examines the characteristics of various urban transportation modes and the relationship between the land development process and provision- demand for urban transportation facilities. Topics include urban transportation modes, capacity calculations, network planning, road capacities, neighborhood planning, bus system planning, rail-based systems and transit network planning. (Available Fall 1988.) **2 credits**

TSYH 582 Transportation Planning Part 2 — A continuation of TSYH 580 with emphasis on traffic and transportation surveys, demand forecasting and transportation modeling techniques used in transportation planning studies. (Available Spring 1989.) **2 credits**

TSYH 720 Engineering Economics Part 1: Fundamentals of Financial Calculations — An introduction to the time value of money and the effects of differing interest rates and periods of payment for both simple and compound interest. Time cash flow diagrams are developed and the theory of annuities presented. **2 credits**

TSYH 721 Engineering Economics Part 2: Introduction to Engineering Economics — Applies the principles learned in TSYH 720 to problems in comparison of alternatives; viability of investment and rate of return; the study of depreciation for the purpose of assessing lease-purchase alternatives and equipment replacement timing. **2 credits**

COMPUTER SYSTEMS TECHNOLOGY

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The computer has made it possible to store, manipulate, retrieve and analyze vast quantities of data and information at high speed, so it is widely used in data processing, business activities and as a management tool. Mainframe computers, minicomputers and personal computers are now commonly used in the business world. The "Programmer-Analyst" is a skilled person who will define the problem to be solved, design the solution, and give the computer a detailed set of instructions (called a program) to follow to solve the problem. It is the human element which determines the degree of success in any computer application.

BUSINESS CERTIFICATE IN COMPUTER SYSTEMS

This program is designed for people working in or seeking employment in the data processing industry. Graduates will qualify to work as programmers, programmer-analysts, or junior systems analysts. All programs must be submitted to the program advisor for approval by the Computer Systems Technology.

Requirements:

- Six of the mandatory courses listed below. (Students with programming experience or managerial experience in a business environment should consider taking COMP 261-361 Computer Systems Development instead of COMP 160-260 Computer Systems Introduction. For clarification, read the course description in this calendar and-or contact the Manager, Information Technology Programs).
- Five computer programming "high level" language courses which may be selected from the electives computer list below.
- At least 4 courses must be non-computer courses which may be selected from the electives business (non-computer) list below.

Mandatory Courses

		Credit
COMP 101	Data Processing Introduction OR	
COMP 103	Data Processing Introduction Microcomputer: APPLE OR	
COMP 105	Data Processing Introduction Microcomputer: IBM PC	3.0
COMP 130	Assembler Programming Language Level 1	3.0
COMP 160	Computer Systems Introduction 1 and	3.0
COMP 260	Computer Systems Introduction 2 OR	3.0
COMP 261	Computer Systems Development 1 and	3.0
COMP 361	Computer Systems Development 2	3.0
FMGT 101	Accounting 1	4.0
FMGT 201	Accounting 2	6.0

Electives: Computer

		Credit
COMP 131	BASIC Interactive Programming Level 1	3.0
COMP 132	FORTRAN IV Programming Language Level 1	3.0
COMP 135	RPG II Programming Language Level 1	3.0
COMP 231	BASIC Interactive Programming Level 2	3.0
COMP 232	FORTRAN IV Programming Language Level 2	3.0
COMP 233	COBOL Programming Language Level 1	3.0
COMP 234	PL-1 Programming Language Level 1	3.0
COMP 236	Pascal Programming Language	3.0
COMP 333	COBOL Programming Language Level 2	3.0
COMP 334	PL-1 Programming Language Level 2	3.0

Electives: Business (non-computer)

Electives should be chosen to complement career goals. The following electives are suggested as a guide for a standard path of studies. All programs must be submitted to the program advisor for approval by the Computer Systems Technology.

		Credit
ADMN 100	Microeconomics	4.0
ADMN 110	Management 1	4.0
ADMN 200	Macroeconomics	6.0
ADMN 211	Management 2	4.0
COMM 160	Business and Technical Communication	3.0
COMM 196	Writing for the Computer Industry	1.5
FMGT 301	Cost and Managerial Accounting 1	4.0
FMGT 401	Cost and Managerial Accounting 2	6.0
MKTG 102	Introduction to Marketing	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
OPMT 188	Management Information Systems	3.0
OPMT 197	Statistics for Business and Industry	4.5

Courses from the School of Engineering Technology may be selected instead, with approval of the program advisor. In selecting electives, students are advised to read this calendar and determine what courses they feel would be appropriate for their certificate programs.

OTHER CERTIFICATES

1. Students working on a high-level certificate such as the Senior Certificate should choose not more than 33% of their courses from non-computer electives. All programs must be submitted to the program advisor for approval by the Computer Systems Technology.
2. Students with a university degree or graduates from BCIT with a National Diploma of Technology may receive a Special Certificate by taking further part-time studies. Please read the policies regarding special certificates in the general information section of this calendar.

Prerequisite Exemptions

Students wishing to apply for exemption from the required prerequisite must submit sufficient documentation to the program advisor, at least six weeks prior to registration. Documentation should include official transcripts and course outlines or a letter from your employer outlining present job duties and functions.

Course Descriptions

ADMN 100 Microeconomics — The major areas studied are the product and resource market. Students analyze supply and demand, how production costs vary and how prices are determined in various market structures. In addition, resource allocation and economic policy implications are explored. **4 credits**

ADMN 110 Management 1 — An insight into the basic nature of business problems and the administrative process involved in handling them, with emphasis on the personnel management function. Study and discussion of actual business situations illustrating problems frequently met in industry requiring managerial analysis, decision and action. **4 credits**

ADMN 200 Macroeconomics — Develops an understanding of the organization and operation of the Canadian Economy in an international setting. The theoretical tools of the economist are used to expand the concepts of national income, employment, inflation, money and banking, international trade, and growth. An appreciation of the relationship between economic theory and economic policy is provided. **6 credits**

ADMN 211 Management 2 — A continuation of the study of functions of management begun in ADMN 110. Prerequisite: ADMN 110. **4 credits**

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communicating in business and industry. It offers practical techniques for planning, organizing, selecting, and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures,and summaries. Oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 196 Writing for the Computer Industry — This 18-hour course is for anyone who writes user manuals. It covers planning, researching, organizing, formatting and writing the manual and testing and packaging the finished product. It emphasizes techniques for translating technical material for the non-technical reader. The course is offered in 3-day formats at the Burnaby and Downtown campuses. **1.5 credits**

COMP 101 Data Processing Introduction — Introduces the principles and concepts of business data processing to those with only a little computer experience. Useful to those who need a better understanding of computer operations. A prerequisite for most systems and programming courses. Lectures and "hands-on" exercises are used to present principles of system design and programming, concepts of hardware-software, word processing, spreadsheets, data base, and integration. Students will use the BASIC programming language on the H.P. 3000 minicomputer, and FRAMEWORK on the IBM PC (or equivalent). Prerequisite: COMP 901-701 or experience. **3 credits**

COMP 102 Data Processing Introduction — A week-long intensive course to introduce the principles of business data processing to those with only a little computer experience. Useful to those needing a better understanding of computer operations. A prerequisite for most systems and programming courses. Lectures and "hands-on" exercises are used to present principles of system design and programming, concepts of hardware-software, word processing, spreadsheets, data base, and integration. Students will use the BASIC programming language on the H.P. 3000 minicomputer, and FRAMEWORK on the IBM PC (or equivalent). Prerequisite: COMP 901-701 or experience. **3 credits**

COMP 103 Data Processing Introduction Microcomputer: APPLE — Introduces the principles and concepts of business data processing to those with little or no computer experience who need a better understanding of computer operations. A prerequisite for most of our systems and programming courses. Lectures and "hands-on" exercises are used to introduce hardware, data representation, applied systems, magnetic disk files, master and transaction files, data entry and control, flowcharting and programming: decisions, arithmetic, branching and output. Students write and test programs using BASIC on the Apple IIE microcomputer. **3 credits**

COMP 104 Computers in Business — For those with a basic understanding of programming and computer systems who are not directly involved in data processing, but require familiarity with current terminology and concepts used in the computer industry. Students learn to communicate effectively with data processing personnel, and to recognize the potential use of computers in a business environment. Topics include data entry and output options; batch, on-line and distributed processing; telecommunications; recognizing the differences between micros, minis and mainframe computers; project management techniques; methodology for evaluating software application packages and the hardware related to implementing a package within a company. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 105 Data Processing Introduction Microcomputer: IBM PC — Introduces the principles and concepts of business data processing to those with only a little computer experience. Useful to those who need a better understanding of computer operations. A prerequisite for most systems and programming courses. Lectures and "hands-on" exercises are used to present principles of system design and programming, concepts of hardware-software, word processing, spreadsheets, data base, and integration. Students will use the BASIC programming language and FRAMEWORK on the IBM PC (or equivalent). Prerequisite: COMP 901-701 or experience. **3 credits**

COMP 130 Assembler Programming Language Level 1 — An introduction to programming for persons intending to become computer programmers. IBM Assembler language is used to familiarize the student with the inner workings of the computer. Students learn to produce working, fully documented Assembler programs for elementary business problems, and to write, test and debug a series of Assembler programs in an online environment. Topics include data storage — character, hexadecimal, packed, and zoned data types; data definition and conversion; arithmetic operations; registers and sub-routines; program analysis; flowcharting; coding; single and multi-level totals. Prerequisite: COMP 101-102-103-COMP 105 (65% or better) or equivalent data processing experience. **3 credits**

COMP 131 BASIC Interactive Programming Level 1 — Introductory programming for those intending to use the BASIC language on an interactive computer terminal system. On successful completion, students will produce working programs for elementary business problems and develop a reasonable knowledge of BASIC language. Using a combination of lectures and "hands-on" experience on the Hewlett-Packard computer, students write, test and debug a series of programs that illustrate the problems encountered in the business data processing field. Topics include logical development of a program, problem analysis, flowcharting, coding and testing, debugging, validation of data, totals, two levels of totals, print formatting, system commands and sequential disk storage. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 132 FORTRAN IV Programming Language Level 1 — Students with introductory experience of computers and computer programming study a "high-level" programming language. Students already familiar with another programming language find the course helpful in understanding computing in general. As preparation for COMP 232 FORTRAN IV Programming Language Level 2, this course provides sufficient knowledge and experience to design, flowchart, write, test and debug simple computer programs as assigned using FORTRAN IV. Additional topics include the syntax and use of a subset of the statements comprising the FORTRAN IV language, application of these statements to solve simple numeric problems, preparation and submission of programs to available computer. Prerequisite: Grade 12 mathematics and COMP 101-102-103-105. **3 credits**

COMP 135 RPG II Programming Language Level 1 — Teaches the fundamentals of programming in RPG II to people with an understanding of data processing concepts. Presents RPG II

programming concepts and techniques as applied in business batch processing. Students learn to write programs of medium complexity and will develop, write, test and run three batch programs. Topics include disk and card input, printed output, the basic RPG II logic cycle, control breaks, matching records, arrays, tables and programming techniques. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 137 C Programming Language Level 1 — A first course in the C programming language. Basic data types, control constructs, operators and syntax are covered first. The course then discusses functions, arrays and pointers. A brief introduction to the Standard C Library functions is also provided. The course will consist of lectures and labs, with a number of programming assignments. Knowledge of an Assembler language or PASCAL is required for maximum benefit from this course. Prerequisite: COMP 130-236 or equivalent. **3 credits**

COMP 144 Assembler Microcomputer Programming Language: IBM PCLevel 1 — An introduction to programming for persons intending to program in the Assembler language on the IBM PC microcomputer. Lectures and practical "hands-on" experience using IBM PC's introduce the fundamentals of the PC Assembler Language. Prerequisite: COMP 103-105. **3 credits**

COMP 145 BASIC Microcomputer Programming Language: IBM PC — Teaches the fundamentals of writing business type date entry and report writing programs. Lectures and "hands-on" experience using IBM PC type computers and Microsoft QUICK-BASIC cover structured programming; using sequential and random type files; subtotals on reports; report design; program documentation; string handling; and validating input data. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 160 Computer Systems Introduction Level 1 — Introduces the basic definition and design of computer systems. Emphasis is on the fundamentals of systems analysis including development of system objectives, problem definition, information gathering, effective written and verbal communication (particularly with user department personnel) about their systems problems and possible computer solutions. The course presents the systems development process and covers basic systems theory, the systems development cycle, information gathering, flowcharting, report writing, forms design and presentation techniques. Additional techniques and their applications to common business systems are presented in COMP 260 Computer Systems Introduction Level 2. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 162 Microcomputers Using dBASE Level 1 — Broadens the knowledge of microcomputer users in the field of data base management using a well established data base system for microcomputers. Topics will explore all aspects of dBASE III's powerful capabilities. Students will develop a menu driven system using multiple data base files. Programming and DOS experience would be helpful to the student. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 164 Microsoft WORD — For students with little or no word processing experience, this six week course introduces the student to the fundamentals of a powerful word processor. Although this program can be used with both the MacIntosh and the IBM PC, this course will be taught on the IBM PC with a mouse. Familiarity with MS-PC DOS would be helpful. **1.5 credits**

COMP 168 FRAMEWORK II Level 1 — Covers the use of Framework II as a power tool to help in various real-life situations. Participants will learn how to use Framework's data base management, spreadsheet, wordprocessing and dynamic outlining features and apply them to solving actual problems related to their own field of interest. Includes: common database structures, spreadsheet design techniques, wordprocessing, report generation, graphical techniques, mailmerge, file and disk management, and introduction to using Framework's programming language. Students will complete a major project related to their own job. Prerequisite: no previous experience of computers is required but keyboard skills are desirable and access to Framework in the work environment is a considerable asset. **3 credits**

COMP 169 LOTUS 1 2 3 — Provides an understanding of the value and uses of a spreadsheet program, and the detailed commands of LOTUS 1 2 3 with respect to spreadsheets, graphics, data management and macros. "Hands-on" experience gives thorough practical knowledge. **3 credits**

COMP 187 Computerized Accounting — For persons with some knowledge of computing and accounting. Students will use IBM PC's or equivalent, and the "Bedford Accounting Package" to cover general ledger, payables and receivables, payroll, job costing, and preparation of financial statements. Prerequisite: COMP 101-102-103-105 and FMGT 101 or equivalent. **3 credits**

COMP 230 Assembler Programming Language Level 2 — A continuation of COMP 130 offering more detail of IBM Assembler language and computer architecture. On completion, students will know the architecture and principles of IBM computer operation and how to use Assembler language in common business programming. Topics include Assembler instruction formats; binary instructions; registers, base-displacement addressing; tables and table look-up techniques; sub-routines and program structure; IOCS: file definition and imperative macros. Prerequisite: COMP 130. **3 credits**

COMP 231 BASIC Interactive Programming Level 2 — Provides advanced programming for persons who expect to work with the BASIC language on an interactive computer terminal system. The course includes lectures and practical "hands-on" experience on the Hewlett-Packard minicomputer. Topics include tape and disk storage; file processing; sequential and direct disk accessing; print formatting; arrays; BASIC instruction set; system commands; functions; subroutines; program efficiency; the interpreter concept. Prerequisite: COMP 131. **3 credits**

COMP 232 FORTRAN IV Programming Language Level 2 — Provides progression into aspects of FORTRAN IV language beyond those covered in COMP 132. Students study the use of FORTRAN IV to design, flowchart, write, test and debug assigned programs and programs within their own fields of endeavor, and follow the logic of programs written by others. Topics include the syntax and use of FORTRAN IV statements related to double precision and logical constants; variables and expressions; subroutine, function and block data sub-programs; processing sequential files on tape and disk devices; the application of these statements to solving both numeric and non-numeric problems; preparation and submission of programs to computer. Prerequisite: COMP 132. **3 credits**

COMP 233 COBOL Programming Language Level 1 — Presents business computer programming using the popular "high-level" COBOL language. Suitable for accountants or accounting students wanting to understand programming in a data processing environment. Serves as preparation for COMP 333 COBOL Programming Language Level 2 for COBOL programming as a career. The student learns to apply the basic principles and practices of business computer programming and to write simple programs in COBOL. Topics include programming methods; structured programming; documentation standards; flowcharting; report design; sequence checks; page overflow, and control breaks. COBOL topics include all language components required to write simple business report programs. Students will write, compile and run COBOL programs on IBM computer. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 234 PL-1 Programming Language Level 1 — Students with previous programming experience learn the PL-1 "high-level" language using typical business programming techniques including coding, testing and debugging PL-1 programs of a relatively complex nature. Lectures and lab sessions cover data declaration; record and stream I-O; PL-1 arithmetic; structures; arrays; built-in functions; procedure and begin blocks. Prerequisite: COMP 130. **3 credits**

COMP 236 PASCAL Programming Language — PASCAL is a structured language which is rapidly gaining popularity, particularly on mini and microcomputer systems. This course is intended for students who have had significant exposure to other languages and understand general programming principles but wish to add PASCAL to their repertoire. The entire Pascal instruction set is covered. Students learn characteristics and advantages of structured and modular programming and to read and write structured programs in PASCAL. Students are encouraged to choose programming assignments relevant to their own particular needs, subject to instructor approval, or they may select assignments provided by the instructor. Programs are entered on-line. Topics include structured programming; modularity; basic and complex data types and structure including arrays, trees, lists and pointers; control statements and structures including recursion, procedures and functions, and Pascal syntax diagrams. Prerequisite: Work experience in programming and-or one of the following BCIT language courses (or equivalent) COMP 234-130-132-231-233. NOTE: COMP 101-102-103-105 is not a sufficient prerequisite to this course. **3 credits**

COMP 237 C Programming Language Level 2 — For programmers with a good working knowledge of C. Topics include data structures, advanced use of pointers, machine level operations, programming style, portability and efficiency. Special emphasis will be placed on the development and use of program libraries and software tools in the C environment. Prerequisite: COMP 137 or equivalent. **3 credits**

COMP 241 Data Communications Concepts Level 1 — An introduction to data communication systems that will provide a basic understanding of business data communication applications and related concepts. A valuable course for those involved in communication and computer industries or those wanting to become conversant with data communication. Topics include basic principles and components of communication systems; line facilities and service offerings provided by common carriers; protocols and data offerings provided by common carriers; protocols and data link controls; local area networks; communication network performance. Prerequisite: Programming or systems design experience. **3 credits**

COMP 242 Microcomputers: Exploring Technical Aspects — A theoretical perspective of the microcomputer field which exposes the student to the capabilities and limitations of a number of real microprocessor devices and microcomputer systems; the wide range of microcomputer applications, including logic design and control as well as traditional data processing applications; microcomputer software — operating systems, languages, program development systems and applications, software and microcomputer technology. Topics include definition of microcomputer, microprocessor; LS or VLS technology; micro CPU concepts; microcomputer families, popular real devices; introduction to the pin-outs of a microprocessor, data-bus, address bus, control lines, clock memory (RAM, ROM, PROM); integration of microcomputer system, connection of memory, I-O ports, common buses (e.g. S-100), power supplies, peripherals, other hardware; hierarchy of levels of computer description: system, PMS, programming (A-L), register transfer (RT), Boolean logic, circuit, device physics; comparing some real micro systems (Apple vs North Star vs IBM PC, etc.); software, operating systems, languages, compile vs interpretation, CPM, Pascal, BASIC, Pilot, FORTH, C, LOGO, etc.; trends, costs, chips, manufacturers, Who's Who in Silicon Valley. Prerequisite: Minimum of COMP 101-102-103-105. An understanding of the computer field from COMP 130 or other computer language courses is highly recommended. **3 credits**

COMP 244 Assembler Microcomputer Programming Language: IBM PC Level 2 — Expands on material covered in COMP 144. Course description unavailable at time of printing. Prerequisite: COMP 144. **3 credits**

COMP 247 LISP Programming Language — LISP is a very popular language for artificial intelligence-knowledge systems (AI-KS) work. Its expressiveness and flexibility are highly prized by AI programmers, and LISP is the basis of many powerful AI-KS programming tool kits. This course is intended for programmers interested in the development of AI-KS applications. It examines LISP origins and use in industry, language features, and various AI programming techniques (e.g. inference engines). Students will build LISP applications. Prerequisite: IBM micro experience and COMP 236, or permission of the instructor. **3 credits**

COMP 248 PROLOG Programming Language — PROLOG, chosen for the Japanese Fifth Generation computer project, is a popular language for Artificial Intelligence-knowledge systems (AI-KS) work. A "logic based" language, PROLOG encourages elegant and concise solution to many difficult programming problems. It examines PROLOG origins and use in industry, language features, and various AI programming techniques (e.g. meta-interpreters). Students will build PROLOG applications. Prerequisite: IBM micro experience and COMP 236, or permission of the instructor. **3 credits**

COMP 249 POWERHOUSE Programming Language Level 1 — Provides a solid base in programming with POWERHOUSE, a fourth generation language. Will include the use of all the modules of the language; the data dictionary utilities, QDD and QUTIL; the screen processor, QUICK; the report generator, QUIZ; and the volume transaction processor, QTP. Prerequisite: Programming experience, or a First Level Programming Language, or permission of the instructor or manager. **3 credits**

COMP 260 Computer Systems Introduction Level 2 — Expands on the fundamentals learned in COMP 160 and develops analytical skills and basic computer systems design techniques. Includes common business applications as processed on small to medium-sized computers. Students learn to gather and organize systems data, prepare systems flowcharts, design files, set up an implementation schedule and other documentation. Coding structures and application systems, i.e. invoicing accounts payable and accounts receivable, are discussed in detail and the roles of data communications, data base usage and small computers in systems design are also discussed. A major systems project utilizes the material presented in COMP 160-260. Scheduling techniques such as Gantt charts, PERT-CPM are introduced. Prerequisite: COMP 160. **3 credits**

COMP 261 Computer Systems Development Level 1 — Provides a working knowledge of systems analysis and develops job skills related to the design of information processing systems, including the ability to contribute actively to the investigation, analysis and design phases of systems development projects. Implementation phases of the systems development life cycle are covered in COMP 361. Lectures, discussion and an extensive case study guide students through feasibility studies, fact finding and analysis. Design alternatives include forms design, hardware considerations, standards and documentation. Prerequisite: COMP 160-260 or an advanced programming course. **3 credits**

COMP 262 Data Base Concepts Level 1 — Data processing personnel study evaluation, selection and implementation of principles of management systems. Introduces the purpose, functions and facilities of data base systems. Students become familiar with various approaches taken to data base software and the procedures for installing a data base management system. Topics include evaluation of data structures, advantages and disadvantages of data base, existing data base applications and insights into the various data base management systems on the market. The role of the data base administrator is developed. Prerequisite: Programming or systems design experience.
3 credits

COMP 263 Microcomputers Using dBASE Level 2 — This course is to further broaden the student knowledge of dBASE III, not only from a programming vantage, but also to cover systems overview and design. Students will design, program, and implement dBASE III systems of their own selection. Prerequisite: COMP 162, or a thorough knowledge of the dBASE III Command Language. **3 credits**

COMP 266 Microcomputers: Business Applications — This course uses LOTUS 1-2-3 to construct business models in such areas as budgeting, inventory control, cash flow analysis, etc. A basic overview of microcomputers will begin the course. "Hands-on" exercises will be stressed, including "what-if" analyses. Other current popular application packages will be discussed and demonstrated. Prerequisite: COMP 101-102-103-105.
3 credits

COMP 267 Microcomputers: Package Implementation — Provides the knowledge and experience for the successful installation of a microcomputer business application package. Using lectures, hands-on experience and actual data, students will be guided through all phases of the installation of a comprehensive business package. Hands-on experience will be gained through use of the IBM PC microcomputer and an up-to-date accounting package. Topics will include: review of the operating systems (DOS) and hardware requirements as they relate to a package implementation; integration of accounting applications such as receivables; inventories together with spreadsheets, word processing and data bases; financial reporting, data entry; package comparisons. Prerequisite: COMP 101-102-103-105. **3 credits**

COMP 268 FRAMEWORK II Level 2 — Covers the use of FRAMEWORK II's programming language. Students will become familiar with concepts and procedures involving project analysis and evaluation so that Framework's programming capability can be used to successfully complete business projects; program design to plan programs logically and efficiently; program writing to create project-required programs; program refinement and completion to ensure that programs meet project needs. Prerequisite: Thorough familiarity with Framework II capabilities, features, operations, and basic functions. COMP 168 or equivalent is a minimum. **3 credits**

COMP 330 Assembler Programming Language Level 3 — Offers advanced study of IBM Assembler language and the opportunity to develop the ability to write extensive programs in this language. Persons already employed in programming find this course helpful in broadening their understanding of programming concepts and IBM operating systems. Students study input-output control and operating interfaces, learn to use the Assembler macro language and magnetic tape and disk storage devices. Lectures and laboratory exercises provide practical experience and cover operating systems interfaces, tape and disk storage, macro writing sub-programs, and logical IOCS operations. Prerequisite: COMP 230. **3 credits**

COMP 332 FORTRAN IV Programming Language Level 3 — Continuation of study of FORTRAN IV language beyond COMP 232. On successful completion, students will be able to make a meaningful contribution to projects assigned in industry with a minimum of supervision. Emphasis is on students developing programs within their fields of endeavor rather than on assigned projects. Topics include the syntax and use of FORTRAN IV statements related to areas such as complex variables, constants and expressions; varying dimensions of arrays and formal elements during processing of a program; processing direct access files on disk devices; the application of statements to solving both numeric and non-numeric problems; preparation of submission of programs to an available computer. Prerequisite: COMP 232.
3 credits

COMP 333 COBOL Programming Language Level 2 — Designed for persons who want to write COBOL programs in a data processing environment using disk and tape files. Students develop an understanding of tape file organization and the COBOL instructions associated with tape files; disk file organizations, including indexed-sequential and random access files and the COBOL instructions associated with their use; utility programs and proper libraries; special techniques. Topics include efficient COBOL programming techniques; sequential and binary table look-ups; subprograms; overlay techniques; multiple disk and tape file handling; indexed sequential and direct (random) file organizations, and all the associated COBOL instructions. Disk libraries, DOS utility support, and sort programs are also taught. Students write a number of programs applying these techniques. Prerequisite: COMP 233 or previous programming experience in COBOL. **3 credits**

COMP 334 PL-1 Programming Language Level 2 — Students learn the PL-1 "high-level" language using typical business programming including coding, testing and debugging PL-1 programs of a relatively complex nature. The course is a continuation of COMP 234 and includes tapes and disk processing, more advanced programming techniques and language features. Prerequisite: COMP 234. **3 credits**

COMP 341 Data Communication Concepts Level 2 — As an extension to COMP 241, this course is valuable to students involved in communication and computer industries. Students will be exposed to advanced topics relating to communication systems for business applications. Topics include the methods and techniques necessary to develop data communication systems and computer teleprocessing; performance modeling of existing and planned networks; future and planned service offerings by the common carriers; network control centre operation; common carriers and regulatory matters. Prerequisite: COMP 241.
3 credits

COMP 346 FOCUS — Productivity is a key concern in the data processing industry. The recent introduction of 4th generation languages promises to speed up the process of developing and implementing information systems. Information centres also use 4th generation languages to meet user needs for fast response for information. FOCUS is a tool to meet these requirements. This course will teach students how to create, update, and report from FOCUS data bases using FOCUS commands. In addition, the FOCUS productivity aids, TABLETALK and FILETALK will be used. This course should be of interest to data processing professionals who want to assess the potential of this 4th generation language tool. Prerequisite: COMP 262 and one high level language. **3 credits**

COMP 349 Powerhouse Programming Language Level 2 — Expands on the material covered in COMP 249. Topics will include procedures, QTP in depth, file linkages, multi-pass programming, and security. Prerequisite: COMP 249. **3 credits**

COMP 360 Computer Systems Testing — Introduces students to the discipline of software testing. It discusses various levels of

testing and focuses on the testing effort within the framework of the life cycle of a development project. Some areas covered are levels of testing — unit, integration, system, etc.; scenario development for online transactions and batch jobs. Students will develop plans, write scenarios, execute tests and document results and problems. Prerequisite: A programming course and COMP 160-260 or 261-361. **3 credits**

COMP 361 Computer Systems Development Level 2 — Expands on material covered in COMP 261 and provides a working knowledge of systems analysis. The course develops the job skills for the documentation and implementation of information processing systems. Lectures and discussion, and a continuation of the case study from Level 1, cover controls, communication techniques, scheduling systems conversion and post implementation auditing. Prerequisite: COMP 261. **3 credits**

COMP 362 Data Base Concepts Level 2 — For persons involved in the logical and physical design of data bases. Information modeling, logical object analysis and normalizing relationships are addressed and students are confronted with problems related to design compromises and performance optimization. They are also encouraged to investigate details of specific DBMS and present conclusions. Prerequisite: COMP 262. **3 credits**

COMP 385 Applied Artificial Intelligence: Design of Expert Systems — Expert or knowledge systems is a sub-field of Artificial Intelligence with many practical applications. Briefly, problem solving knowledge in a narrow domain is encoded and a specialized control program uses this "knowledge base" to determine solutions to relevant problems. The course examines the formalization and storage of knowledge, automated reasoning strategies, problem selection, software tools and industry trends. Students will develop knowledge systems using a "shell", LISP, or PROLOG. Prerequisite: Microcomputer and programming experience, or COMP 101-102-103-105 and another language. **3 credits**

COMP 440 CICS — This course will teach experienced PL-1 and COBOL programmers how to design and code on-line programs using CICS. Topics will include screen mapping, and the CICS commands to handle required processing. Prerequisite: COMP 333-334 or equivalent experience. **3 credits**

COMP 701 Understanding PC-MS DOS — Gives an in depth knowledge of the PC-MS Disk Operating System (DOS) to those who feel they know nothing about a PC. This course will cover all the essential commands contained in the DOS, including formatting disks, copying disks. To provide an understanding of how to use PC-MS DOS files, essentials of Hard Disk management, and Batch File creation. **1.5 credits**

COMP 761 Developing Computer Aided Instruction — How to use the computer as an effective educational tool. Includes evaluating CAI packages, instructional development cycle, screen design, use of color, animation, user friendliness, instructional design, feedback, testing, team approach, tools to use, benefits, costs, issues, and an introduction to interactive video. The hands-on lab will involve creating a lesson based on the covered principles, using an authoring package on an IBM PC. Familiarity with DOS and the keyboard is recommended. Prerequisite: COMP 701. **3 credits**

COMP 901 Computing for the Timid — A short course for those who have never used a computer — particularly for those who are afraid of them. Explains the major parts of the computer, keyboard, and disks. Gives hands-on experience on both the HP 3000 minicomputer and IBM PC's to familiarize the student with computers. **non credit**

COMP 925 Build Your Own PC — Gives the student an understanding of the internal physical components of the IBM. An IBM-compatible kit will be purchased and assembled by the student who will learn to care for and maintain it, including problem diagnosis. Students will be able to upgrade the computer hardware. Cost of the kit is extra. **non credit**

FMGT 101 Accounting 1 — Permits persons with little or no accounting background to become familiar with the techniques of working through the full accounting cycle. It provides theoretical and practical training in basic accounting as preparation for FMGT 201. Topics include accounting as an information system, introduction to accounting theory, income measurement, traditional record-keeping procedures, the accounting cycle, special journals, cash investments and receivables. **4 credits**

FMGT 115 Accounting 1L — Enables students to start the basic course in accounting in January. It is the equivalent of FMGT 101 and the first six weeks of FMGT 201 for a total of 18 weeks of the 30 week presentation. The balance of the course may be taken in either May or September FMGT 215. For a description of the course content see FMGT 101-201. **6 credits**

FMGT 201 Accounting 2 — The follow-up to FMGT 101, topics include inventory long-lived assets, liabilities, forms of business organizations, cash-flow and working capital analysis, manufacturing accounting, management accounting, consolidated statements, analysis of financial statements and price level changes. Prerequisite: FMGT 101. **6 credits**

FMGT 215 Accounting 2S — The follow-up to FMGT 115, enabling students to complete the last 12 weeks of the basic accounting course. See FMGT 201 for details. Prerequisite: FMGT 115. **4 credits**

FMGT 301 Cost and Managerial Accounting 1 — Emphasizes the role of the management accountant, cost terms and purposes, cost-volume-profit relationships, job order accounting, budgeting, responsibility accounting and standard costs. Prerequisite: FMGT 201. **4 credits**

FMGT 401 Cost and Managerial Accounting 2 — Enables the student who has completed FMGT 301 to understand cost accounting techniques which will assist management in planning, control, income determination and decision making. The course emphasizes direct costing, relevant costs, cost allocation, capital budgeting, inventory planning and valuation, joint and by-product costs, process costing, payroll; factory ledgers and decentralization and transfer pricing. Prerequisite: FMGT 301. **6 credits**

MKTG 102 Introduction to Marketing — This introduction to the marketing environment and marketing institutions includes a detailed study of the basic marketing functions, marketing research, product planning, selection of trade channels, merchandising, advertising, sales promotion and salesmanship. Marketing of consumer goods as well as industrial goods will also be covered. **3 credits**

OPMT 188 Management Information Systems — Students learn to use a managerial systems approach to the management information area; review, assess and evaluate information processing hardware and software; evaluate management needs for information and integrate those needs into the management system; design and implement a simple management information system. The course is not intended to produce highly skilled MIS practitioners, but to provide an understanding of basic MIS concepts. Students learn how to relate to MIS specialists and managers in large organizations and how to approach a MIS problem in a small organization that would not normally have MIS specialists on staff. **3 credits**

OPMT 197 Statistics for Business and Industry — A comprehensive study of elementary statistical methods as applied to objective decision making, suitable for persons requiring statistics

to initiate market research, audit sampling, quality control, inventory control and business forecasting. The course includes an introduction to the use of statistics in business and industry; descriptive statistical techniques — collection and treatment of data; a review of elementary set theory and probability; inferential statistical topics — sampling, estimation, hypothesis testing, goodness of fit, regression analysis, correlation and time-series analysis. **4.5 credits**

ELECTRONICS TECHNOLOGY

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Electrical energy, industrial automation and control, telecommunications and microchips form the base of modern high technology. These disciplines and the related systems and equipment are essential to the factory, the industrial process, the office, the small business, the hospital and the home.

There is a need for persons trained in the principles and applications of electronics to take their places in the technical team. The positions held by these persons are found in design, development, production, installation, sales and maintenance. The positions may be with commercial companies, government agencies, or educational institutions. The technologist graduate of the Electronics Technology program is an essential member of the team.

The Electronics Technology program is accredited by the Applied Sciences Technologists and Technicians of British Columbia.

Electronics Technology Evening Classes and Prerequisite Requirements

The following courses are normally available during evening sessions. Many other electronics technology courses are available on a part-time day basis. Most electronics technology day courses are available twice a year, starting in September and again in February.

Most courses listed below are identical to day school courses. Easy transfer from part-time to full-time studies is thus facilitated.

Courses

ELEC 150	Illumination
ELEC 208	Circuit Analysis AC-DC
ELEC 250	Electrical Systems
ELEC 406	Digital Communications
ELEC 415	Computer Systems
ELEX 100	Circuit Analysis 1
ELEX 101	Electronic Manufacturing
ELEX 102	Digital Techniques
ELEX 112	Digital Techniques 1 Upgrade
ELEX 163	Printed Circuit Board Design
ELEX 200	Circuit Analysis 2
ELEX 201	PASCAL Programming
ELEX 202	Digital Techniques 2
ELEX 203	Electronic Circuits 1
ELEX 302	Digital Systems
ELEX 303	Electronic Circuits 2
ELEX 307	Pulse Techniques
ELEX 309	Professional Practice
ELEX 311	CAD Systems
ELEX 325	Electrical Equipment
ELEX 331	Telecommunications Circuits and Systems 1
ELEX 512	Introduction to Single Chip Microcomputers
ELEX 513	Single Chip Microcomputers

Certificate Programs

The Intermediate Certificate and Certificate of Technology in Electronics Technology are available to those students who obtain at least 50% of their required course credits in an approved program of part-time studies offered by BCIT's electronics technology department.

Note: New courses, which typically contain more hours of study, will have the new ELEX prefix to differentiate them from the original shorter ELEC courses in previous calendars.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN ELECTRONICS TECHNOLOGY

		Credit
*ELEX 100	Circuit Analysis 1	7.0
ELEX 101	Electronic Manufacturing	6.0
ELEX 102	Digital Techniques 1	6.0
*ELEX 200	Circuit Analysis 2	6.0
ELEX 203	Electronic Circuits 1	6.0
*ELEC 208	Electric Circuits AC-DC	13.0
MATH 143	Mathematics 1	8.0
PHYS 106	Physics 1	7.0
TCOM 114	Technical Communication 1	3.0

*ELEC 208 is an accelerated combined (ELEX 100 and 200) course for those with previous training. This course proceeds at a very rapid pace. Successful students usually have a strong mathematics background. After approximately four weeks, a written examination will determine those who will be permitted to continue in ELEC 208, and those who will be required to transfer to ELEX 100.

ELEC 208 is normally taken concurrently with MATH 113 (accelerated MATH 143). Please read course descriptions for further information.

CERTIFICATE OF TECHNOLOGY IN ELECTRONICS TECHNOLOGY

		Credit
ELEX 201	PASCAL Programming	5.0
ELEX 202	Digital Techniques 2	7.0
ELEX 303	Electronic Circuits 2	5.0
ELEX 307	Pulse Circuits	6.0
ELEX 331	Telecommunications 1	6.0
MATH 243	Calculus for Electronics	7.0
PHYS 206	Physics 2	5.0

Persons on existing programs whose previously approved courses are not on the above course listing should apply for a program modification. The modified program will typically require between 85 and 90 credits depending on individual circumstances. On a case-by-case basis, the department may make some adjustment to total credits required.

Course Descriptions

ELEC 150 Illumination — An introductory course in illumination which examines electrical systems pertaining to buildings. Deals with the language of lighting, design methods, characteristics and types of light sources and the economics of lighting. As the lighting

system is generally designed by the electrical system designer, it is necessary to have a working knowledge of lighting systems when studying the electrical system. Prerequisite: MATH 101, 102. **3 credits**

ELEC 208 Circuit Analysis AC-DC — Applicants are required to obtain authorization from the department before enrolling in this course. This course enables persons with a strong background or education in the electrical field to cover and-or review those topics necessary to take the more advanced courses in the Electronics program. Students study the basics of how single phase AC and DC circuits work, and how to analyze and design them for particular situations. This course is not intended for those without previous training in electrical theory or advanced math. Prerequisite: Math higher than Algebra 12, Physics 11 and Chemistry 11; entry to this course by written permission of technology only. **11 credits**

ELEC 250 Electrical Systems — Students learn how to plan the electrical system for a specific building with the electrical designer. How to read and work with common electrical drawings and specifications, understand single and three-phase systems, and power factor correction for minimal operations costs; recognize and avoid building designs that create costly electrical design problems. Prerequisite: ELEC 150. **3 credits**

ELEC 406 Data Communication — Introduces the techniques used to communicate digital data from one point to another. Topics include transmission media, channel characteristics and interface standards (RS 232C, RS 449, current loop). Techniques for modulation (FSK, PSK, QPSK) and data coding (NRZ, RZ, Manchester) are presented. Error detection and correction is covered. Other topics include bandwidth bit rate limitations, character-oriented (HDLC) and bit-oriented (Bisync) protocols, as well as networking schemes. Prerequisite: ELEX 302, 303 or 333, and ELEX 307. **6 credits**

ELEC 415 Computer Systems — Introduces software and hardware concepts and strategies that are essential for development of computer systems. Topics include: top-down design; disk controllers and structures; direct memory access; inter CPU communication; stand alone systems; and memory management. Prerequisite: ELEX 302 and ELEC 406 (ELEC 406 may be taken concurrently). **6 credits**

ELEX 100 Circuit Analysis 1 — Teaches the principles and methods of analysis related to DC circuits. Topics include SI units and terminology, voltage, current, work, energy, power and resistance. Methods of analysis include mesh, superposition, nodal, Thevenin and Norton. Transients in RC and RL circuits are analyzed. Labs are synchronized with lectures so that theory is studied and confirmed by application. Prerequisite: Algebra 12, Physics 11. **7 credits**

ELEX 101 Electronic Manufacturing — Through the design and manufacture of specific electronic projects, students learn the skills required to do basic soldering, printed circuit repair and rework, high reliability soldering, design and fabrication of single- and double-sided printed circuit boards. Upon successful completion, the student will be able to demonstrate a good understanding of the components used in the manufacture of electronic equipment, chassis and metal cabinet design, electronic drafting conventions, tools and techniques used in electronic fabrication, printed circuit design and manufacturing methods, tools used for PC board repair, high reliability soldering requirements, repair of heat and mechanically damaged PC boards, as well as, techniques required in the design and manufacture of single- and double-sided printed circuit boards. **6 credits**

ELEX 102 Digital Techniques — Begins with a description of the fundamental theory of the decimal and binary number systems. Followed by an introduction to the binary (two states or levels) concept and description of binary variables as they relate to mechanical switches. Various digital logic circuits are discussed and their truth tables and Boolean output equations are generated. Various logic sources are defined and interfaced to combinational logic circuits comprising electronic logic gates. A TTL data book will be utilized to facilitate combinational logic circuit design. Boolean identities and Karnaugh mapping will be used to minimize algebraic expressions. Combinational digital logic will be designed and constructed implementing NAND and NOR GATES using their proper Demorgan's equivalent logic symbols (Duality of Gates). Encoders and decoders will be introduced. Upon successful completion of this course, students will be able to use the standard logic symbols correctly and apply proper gating techniques to the analysis and construction of basic logic circuits from word problems, or in the laboratory environment. **6 credits**

ELEX 112 Digital Techniques 1 Upgrade — Provides an upgrade from the old ELEC 202 which was 3 credits to the new ELEX 102 which contains more material and is now 6 credits. **3 credits**

ELEX 163 Printed Circuit Board Design — Trains students in the design and manufacture of single and double-sided printed circuit boards. This course is designed with the electronic hobbyist in mind. For those students seeking credit for ELEX 101, but without PC board training, this course will complete the credit requirement. **2.5 credits**

ELEX 200 Circuit Analysis 2 — Introduces the behaviour of electrical circuits and networks when driven by a single-phase alternating current (AC) source in preparation for courses in electronics and power systems. The course includes the sine wave, average and effective values, power and power factor; resistance, capacitance and inductance as elements in single-phase AC circuits; phaser diagrams, impedance, admittance, voltage, current and power diagrams; analysis of AC circuits with complex algebra; resonance and resonant circuits, high and low pass filters; the application of circuits laws and theorems to single-phase AC circuits, coupled circuits. Circuit theory is verified using multimeters, sine wave generators and dual trace oscilloscopes. Prerequisite: ELEX 100, MATH 143. **6 credits**

ELEX 201 PASCAL Programming — An introductory course on microcomputer use, DOS operating system, programming languages, compilers and interpreters. The IBM personal computer is used throughout this course for interactive student training. The main part of the course covers PASCAL programs for electronics engineering applications. Students will also learn to document, debug, and utilize available software libraries. Prerequisite: ELEX 100, 200 or ELEC 208 (may be taken concurrently with ELEX 200 or ELEC 208). **5 credits**

ELEX 202 Digital Techniques 2 — Studies the utilization of logic circuits. TTL family specifications including noise margins, loading and propagation delays. Interfacing of various digital circuits, encoding and decoding of numbering systems and digital arithmetic, sequential logic, flip flops, counters and shift registers. Also included are frequency counters, digital multiplexing and memories. Prerequisite: ELEX 102 **7 credits**

ELEX 203 Electronic Circuits 1 — Explains how electronic circuits work: how to analyze, design, modify and combine them to perform complex functions. Topics include interpretation of bipolar and field-effect transistor characteristic curves; voltage and current amplifying circuits; the transistor as a switch; loadline analysis; choice of Q-point; bias circuits; equivalent circuits; frequency response, feedback, oscillation response; oscillator circuits; power amplifiers of various types; heat sink calculations; DC power supplies and characteristics and application of switch-

ing devices. Prerequisite: MATH 143, PHYS 106, ELEX 200 (ELEX 200 may be taken concurrently). **8 credits**

ELEX 302 Digital Systems — Applies knowledge gained in ELEX 102-202 to study digital and display Mux , A-D and D-A concepts, bus techniques, memory ICs and decoding schemes. A detailed introduction to microcomputer architecture is undertaken using the Z80 as an example. The student is also introduced to machine-assembly language programming; an operating system; utilities (assembler, text editor, linker, software debugger, etc.). Z80 timing, control, buffering, interfacing, interrupts and support chips are studied in detail using a small single board Z80 system. Prerequisite: ELEX 200, 201, 202, 203, 303, or 333 (ELEX 303 or 333 may be taken concurrently with ELEX 302). **7 credits**

ELEX 303 Electronic Circuits 2 — A continuation of ELEX 203. The course begins with the differential amplifier and its small-signal analysis and performance. This material forms an introduction to linear integrated circuits, particularly the operational amplifier and some of its circuit applications including an introduction to active filters. Prerequisite: ELEX 200, 203, and MATH 243. **7 credits**

ELEX 307 Pulse Techniques — Introduces pulse signal circuits such as clippers and clamps, transistor switches, astable and monostable multivibrators, Schmitt triggers, ramp generators, DC to DC converters and phase lock loops. Both discrete transistors (bipolar and FET) and CMOS integrated circuits are used in building these circuits. Each circuit is analyzed in detail and its practical application is considered. Prerequisite: ELEX 200, 202, 203, and MATH 243. **6 credits**

ELEX 309 Professional Practice — The Canadian legal system: business organizations; tort; liability; proof; contracts; offers and acceptance; intent; consideration; capacity; legality; fraud; misrepresentation, duress and undue influence; mistakes; contract interpretation; discharge of contract; breach of contract; client-professional agreement; concurrent liability; honesty; construction contracts; arbitration; mechanics lien legislation; Combines Investigation Act; engineering legislation and statutes; industrial property; patents; trademarks; copyright; industrial design; trade secrets; federal and provincial laws relating to labor. Engineering technology organizations in Canada: development; legal status; professional designations; codes of ethics; discipline; errors and omissions. Operation of engineering technology organizations. **2 credits**

ELEX 311 CAD Systems — Introduces the student to computer programs used in engineering. The DOS operating system's advanced features and utilities are covered. A spreadsheet for costing and accounting is introduced. A printed circuit board layout program is introduced. AutoCAD is used for drafting and the student will produce a project with it. PASCAL is also used to solve engineering problems. Prerequisite: ELEX 101, 201, 302 (ELEX 302 may be taken concurrently with ELEX 311). **6 credits**

ELEX 325 Electrical Equipment — Begins as a continuation of circuit analysis, then studies motors, generators, transformers and rectifiers. Topics include a review of phaser diagrams, power factors, three-phase power and circuit analysis, single- and three-phase power and circuit analysis, single- and three-phase power distribution systems, DC motors and generators, induction motors, synchronous motors and generators, motor control circuits, transformers (single- and three-phase), and three-phase rectification. Prerequisite: ELEX 200, MATH 243, and PHYS 106. **3 credits**

ELEX 331 Telecommunications Circuits and Systems 1 — Introduces the principles of telecommunications and defines the telecommunication system. Various modulation systems are explained including amplitude modulation, single-sideband and frequency and phase modulation. A typical transmitter and receiver are examined, first in block form, then component circuits are examined in more detail. Frequency synthesis is also covered. Prerequisite: ELEX 203, MATH 243, and ELEX 200 or ELEX 208. **7 credits**

ELEX 512 Introduction to Single Chip Microcomputers — Students will be instructed in the structure, operation and applications of the Motorola 68HC11 single chip microcomputer. They will each have the use of an IBM-type MS-DOS -based computer for machine language program development and a 68HC11 emulator board for interfacing and programming. Prerequisite: Previous digital hardware and assembly language programming experience is essential. **1.5 credits**

ELEX 513 Single Chip Microcomputers — A continuation of Elex 512 for those wishing more instruction and hands-on time. **2 credits**

MATH 143 Basic Technical Mathematics for Electronics — Common and natural logarithms, logarithmic-semilogarithmic graphs, decibels, exponential growth and decay. Systems of linear equations, determinants, application to electrical networks. Trigonometric functions, identities, solution of triangles, graphing and addition of sinusoidal functions. Complex numbers, rectangular-polar transformations, phasor representation of sinusoidal waveforms. **7 credits**

MATH 243 Calculus for Electronics — The derivative, differentiation rules, applied maxima-minima and implicit differentiation with applications to electrical technology. Anti-differentiation, the indefinite integral and the definite integral including area, mean value and RMS value. Differentiation and integration of trigonometric, logarithmic and exponential functions. This course will be offered in 89/90 and 91/92; it will not be offered in 88/89 or 90/91. The format of this course is currently being changed. Please call 432-8458 for information on changes to course length, credits and topics. **7 credits**

PHYS 106 Physics for Electronics Technology — A general level course about physical quantities, their properties, relationships, how they affect each other and their connecting principles. Motion, force, mechanical energy and power are studied concerning translational and rotational motion. Basic electricity, atomic physics and the band theory of solids and its application to semiconductor devices. The lab program emphasizes measurement, data analysis and experimental techniques while confirming and expanding lecture concepts. Math treatment requires algebra, trigonometry and vector analysis. **6 credits**

PHYS 206 Physics for Electronics Technology — Continued from PHYS 106, this general level course covers magnetism and magnetic materials, fluids, thermal energy, vibrations and waves, optics and electromagnetic radiation, and modern physics. Applications and principles in the electrical engineering field are stressed. The lab program emphasizes measurement, data analysis and experimental techniques while confirming and extending lecture concepts. Prerequisite: PHYS 106. This course is scheduled for 88/89 and 90/91. It may not be offered in 89/90 or 91/92. **5 credits**

TCOM 114 Technical Writing for Electronics — An introduction to basic technical writing skills. Students develop competence in planning, organizing and presenting information using graphics, writing technical descriptions, instruction and routine technical correspondence. Students also prepare a resume and application for Co-op. Prerequisite: B.C. English 12 "C" standing. This course is scheduled for 88/89 and 90/91. It will not run in 89/90. **4 credits**

MECHANICAL DESIGN TECHNOLOGIES

Ron Sterne, B.A.Sc.,M.A.Sc., P.Eng., F.M.A., Associate Dean
Telephone: 432-8262

CAD-CAM
Computer Aided Engineering
- **Spatial information Systems**
- **Advanced Manufacturing**
- **Resource Processing**
- **CAD Programming**

Mechanical
Mechanical Systems
Plastics
Robotics and Automation

CAD-CAM Technology

Philip Dollan, H.N.C., Program Co-ordinator
Telephone: 434-5734, Local 5554
Program Advisor
Telephone: 432-8467

The program leading to the award of the Diploma of Technology in CAD-CAM Technology consists of CAD-CAM courses plus mandatory core courses and other technology courses to the required total credits. The program is the equivalent of Year 2 of the full-time program, i.e. it contains courses that are equivalent to all the CAD-CAM related courses taken by a student in the second year of the full-time Diploma program.

The program may be completed in four years of part-time study, and the courses will be offered in a sequence each term to facilitate logical progression through the program. Course enrolment is restricted to about 20 students. Courses will definitely run with as few as 12 students. A surcharge may be levied to run courses with fewer than 12 students.

The prerequisite for entry into the program is an approved Certificate of Technology or equivalent in an engineering technology from a recognized educational institute, plus satisfactory completion of pre-entry CAD training courses, CDCM 213 and 214. Approval must be sought from BCIT before entry to the program. Applications should be submitted to the program advisor for approval by the Technology Department.

DIPLOMA OF TECHNOLOGY

Prerequisite: approved Certificate of Technology or equivalent in an engineering technology, plus CDCM 213 and 214. or AICO 213 and AICO 214.

		Credit
AICO 313	AutoLISP Programming	3.0
AICO 501	Graphics Programming in FORTRAN 77	6.0
AICO 502	Systems Analysis	3.0
AICO 601	File Handling and Data base	9.0
AICO 602	Systems Management	3.0
AICO 603	Systems Acquisitions	3.0
CDCM 303	Computer Aided Manufacture	6.0
CDCM 311	3D CAD Drafting	4.0
CDCM 312	Graphics Programming Language	3.0
CDCM 402	CAD-CAM Projects	9.0
CDCM 404	CAD Design	4.5
MATH 349	Numerical Methods for Mechanical	4.0
MATH 460	Mathematics for CAD-CAM	6.0
MECH 301	Machine Design 1	4.0
MECH 320	Fluid Power 1	3.0
ROBT 470	CNC and Robotic Languages	6.0

Course Descriptions

AICO 213 AutoCAD 1 - Microcomputer based CADD using the latest release of AutoCAD software on IBM ATs. The course includes an introduction to CAD machine components, architecture, logon procedure and displays. An introduction to AutoCAD functions includes: windows, views, measuring, element placement, and advanced geometric construction. Prerequisite: MECH 140 or appropriate drafting experience. **3 credits**

AICO 214 AutoCAD 2 - A continuation of AutoCAD 1. Topics covered are: annotations, dimensioning, screen menu creation, plotting and digitizing. Class assignments may be tailored to one of three discipline areas: mechanical drafting, architectural drafting, or electrical drafting, depending upon students background. Prerequisite; AICO 213 or equivalent. **3 credits**

AICO 215 Computervision 1 - The first course that all personal designer users should attend. It provides an introduction to the system and discusses the menus and screen icons needed for design and engineering functions. The course teaches the procedures required to set up, build, edit and manipulate 2D models and drawings using MicroCADD's geometric construction and detailing. **3 credits**

AICO 216 Computervision 2 - A continuation of Computervision 1, 3D and surface models. Prerequisite: AICO 215. **3 credits**

AICO 313 AutoLISP Programming 1 - Introduction to AutoLISP. Upon - Introduction to AutoLISP. Upon completion, students will be able to obtain and display user information in an AutoCAD work session; perform math calculations using AutoLISP; use the logic control structures of AutoLISP; access and change system-wide AutoCAD settings; write elementary graphic programs in AutoLISP. Prerequisite: AICO 214 or CDCM 214 and an introductory programming language or equivalent. **3 credits**

AICO 501 Graphics Programming in FORTRAN 77 - Introduction to FORTRAN programming. Emphasis will be on the solution of engineering problems and graphics problems using structured problem solving techniques. Prerequisite: CDCM 101 or equivalent. **6 credits**

AICO 502 Systems Analysis - Introduction to standard problem analysis tools: flow charting, Nassi-Schneidermann, decision tables, systems analysis tools, flow graphs, structure charts and data flow analysis, scheduling and CP methodology. **3 credits**

AICO 601 File Handling and Data Base - An introduction to integrated graphics-programming environments. Emphasis will be on file systems (sequential, direct, keyed) and data base systems (hierarchical network). Prerequisite: CDCM 302, 312 and MATH 460. **6 credits**

AICO 602 Systems Management - Systems management techniques for a modest CAD-CAM shop. Day to day system operations procedures. Prerequisite: CDCM 406. **3 credits**

AICO 603 Systems Acquisition - Requirements analysis, evaluations and acquisition of CAD-CAM equipment. Disciplined acquisition studies. Prerequisite: CDCM 411. **3 credits**

CDCM 101 Computer Science 1 - Introduction to Computer Science and Programming using the BASIC language. Emphasis will be on engineering problems using structured problem solving techniques. **3 credits**

CDCM 213 Intergraph 1 - Rudiments of Computer Aided Drafting. Machine Log-on procedures, simple 2-D drawings. Stress on orthographic projections, dimensioning, annotations and standard assemblies. Prerequisite: MECH 140 or other appropriate drafting experience. **3 credits**

CDCM 214 Intergraph 2 - A continuation of Intergraph 1. Customizing a CAD system using cell libraries and tablet menus. Prerequisite: CDCM 213. **3 credits**

CDCM 303 Computer Aided Manufacture - Introduction to Computer Aided Manufacturing, computer integrated manufacturing and automated process control. Generation of machine instructions from computerized 3D models. Prerequisite: CDCM 311 and ELEC 470. **6 credits**

CDCM 304 Engineering Design - An introductory course in engineering design. The emphasis is on mechanical and structural applications through analysis, and conceptual drawing and design. Prerequisite: CDCM 311 and MECH 219 or other approved technology courses. **4 credits**

CDCM 311 3D CAD Drafting - Elementary 3D modeling, auxiliary, isometric and perspective projections using a computer. Prerequisite: CDCM 213, 214 or AICO 213, 214. **4 credits**

CDCM 312 Graphics Programming Language - A continuation of 3D drafting. Symbol library creation and graphics programming in 3 dimensions using Intergraph's user command language. Prerequisite: CDCM 311. **5 credits**

CDCM 402 CAD-CAM Projects - Student managed projects with applications in students area of interest. Projects integrate programming in graphics, data base integration and engineering problem solving. Prerequisite: CDCM 406, 404 or permission of the department. **9 credits**

CDCM 404 CAD Design - Understanding how computers can help in the design process. Interaction with software packages using surfaces and-or solids modeling. Prerequisite: CDCM 304. **4.5 credits**

MATH 349 Numerical Methods for Mechanical - Numerical integration, numerical solution of differential equations, iterative solution of equations, linear programming (simplex) and an introduction to computer programming. Prerequisite: MATH 204 or equivalent. **4 credits**

MATH 460 Mathematics for CAD-CAM - Algorithms of computer graphics. Introduction to geometric modeling and finite element method. Prerequisite: MATH 349. **6 credits**

MECH 301 Machine Design 1 - Covers the theory in prerequisite courses plus combined stresses with emphasis on solution by Mohr's circle; theories of failure; stress concentration; fatigue phenomena; welded connections; bolted and riveted connections; spur; helical and worm gear drives; speed reducers; belt and roller chain drives; flexible couplings; shafts; antifriction and journal bearings; brakes and clutches; power screw; helical and leaf springs; introduction to mechanical vibrations with emphasis on the critical speeds of rotating assemblies. Continued in MECH 401. **4 credits**

MECH 320 Fluid Power 1 - Provides an understanding of pneumatic control systems. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of simple and sequential control systems. Sizing calculations for system components are covered. **3 credits**

ROBT 470 CNC and Robotic Languages - Introduces the student to current CNC and Robot languages such at APT and VAL. Investigates the integrated manufacturing centre. Prerequisite: CDCM 101, MECH 130 and MECH 435 or equivalents. **6 credits**

Computer Aided Engineering

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Computer Aided Engineering (CAE) embraces a diverse field of engineering disciplines. Programs in CAE have in common the use of emerging computer technology to solve traditional problems. All of these programs mix courses of interest to discipline specialists with general courses in new technologies.

The foundation courses in computers include Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Spatial Information Systems (SIS), Geographical Information Systems (GIS), Computer Numerical Control (CNC), and Direct Numerical Control (DNC). Programming languages, file handling and database systems, theory and practice of networking, distributed systems are used where relevant.

These programs are of interest to the practicing technologist and engineer, recent graduates from technology level programs, and others with relevant engineering backgrounds. Four one year post-diploma level programs are currently offered:

Spatial Information Systems
Advanced Manufacturing
Resource Processing
CAD Programming

COMPUTER AIDED ENGINEERING - SPATIAL INFORMATION SYSTEMS OPTION

Computers are affecting all engineering practice, but nowhere is the technology more exciting than in the creation and maintenance of earth models. With the computer, our traditional flat, deformed representations of the earth are being transformed into fully informative models with a myriad of applications. The development of Spatial Information Systems has been accelerated by advances in computer hardware, software and space technology.

Prerequisite

Applicants must have a Diploma of Technology equivalent to BCIT or better, or approval by the Associate Dean. Applicants should have good communication and engineering skills, ability to reason in a logical manner and a good disposition towards team work.

DIPLOMA PROGRAM

		Credit
AICO 501	Graphics Programming in FORTRAN 77	6.0
AICO 502	Systems Analysis	3.0
AICO 503	CAD and Graphics	4.0
AICO 504	Data Structures in C	6.0
AICO 505	Spatial Information Systems 1	3.0
AICO 507	Applied Mathematics	4.0
AICO 601	File Handling and Data Base	9.0
AICO 602	Systems Management	3.0
AICO 603	Systems Acquisitions	3.0
AICO 605	Issues in Networking	4.5
AICO 607	Projects	7.0
AICO 608	Natural Resources and Engineering Mapping	6.0
AICO 618	Remote Sensing	4.5

		Credit
AICO 619	Spatial Information Systems 2	4.5
AICO 620	Spatial Information Systems 3	4.5
AICO 621	Applied Mathematics 2	4.0
CDCM 312	Graphics Programming Language	3.0

Course Descriptions

AICO 501 Graphics Programming in FORTRAN 77 — Introduction to FORTRAN programming. Emphasis will be on the solution of engineering problems and theory of CAD systems using structured programming techniques. At the completion of the course the student will understand how a simple CAD system is implemented. Prerequisite: CDCM 101 and CDCM 201 or equivalent. **6 credits**

AICO 502 Systems Analysis — Introduction to standard problem analysis tools: flow charting, Nassi-Schneidermann, decision tables, systems analysis tools, flow graphs, structure charts, and data flow analysis, scheduling and CP methodology. **3 credits**

AICO 503 CAD and Graphics — This concentrated CAD course will give the student extensive hands-on practice on leading edge CAD equipment. Students will be given exposure to both 2D and 3D graphics with examples drawn from the earth sciences. **4 credits**

AICO 504 Data Structures in C — Introduction to C. Emphasis will be on the solution of problems solvable in a microcomputer environment; software package design and implementation, and programming techniques. Problems will be selected from polygon processing algorithms. Prerequisite: CDCM 101 or equivalent. **6 credits**

AICO 505 Spatial Information Systems 1 — Gives the student a broad overview of hardware, software systems and capability measuring. The course establishes our perspective for subsequent courses in Spatial Information Systems. **3 credits**

AICO 507 Applied Mathematics 1 — Gives students expertise in numerical methods. Floating point computations, matrices, and simultaneous linear equations, interpolation methods, approximation methods, numerical integration, solutions to nonlinear equations, random number generation. **4 credits**

AICO 601 File Handling and Data Base — Sequential, direct and keyed indexed file handling. Introduction to data base systems: hierarchical, network and relational. Stress on micro based systems and engineering applications. Inventory control, BOM, etc. Discussion of DB and its impact in an integrated DP environment. Prerequisite: AICO 501. **9 credits**

AICO 602 Systems Management — Issues related to the management of computer systems: backup strategies, security issues, system utilization measures, system accounting, vendor liaison, preventative maintenance scheduling. Stress on micro and minicomputer support. **3 credits**

AICO 603 Systems Acquisitions — Documentation required for the acquisition of automating equipment. Cost-benefit analysis. Analysis of organizational issues. Identifying scope of automation. Impact of implementation on existing structures. **3 credits**

AICO 605 Issues in Networking — Communication between computers. Networking theory and practice. Distributed processing with special emphasis on microcomputers. Software management of LAN systems. Theory of ETHERNET and ISO standards. **4.5 credits**

AICO 607 Projects — Affords students the opportunity to work on a comprehensive project with an industry mentor, or on a project of their own choosing. Students will have an internal advisor. The project will demonstrate the student's practical grasp of SIS. **7 credits**

AICO 608 Natural Resources and Engineering Mapping — Informs students of the fundamental operations in the process of digital base mapping through analytical photogrammetry, and how to compile, transform, edit and store data sets in a form equivalent to government standards for this type of information. **6 credits**

AICO 618 Remote Sensing — Describes the concepts and foundations of remote sensing; the features of the instrumentation used in remote sensing; defines pattern recognition and examines the key steps in applying remote sensing to earth resources management problems. **4.5 credits**

AICO 619 Spatial Information Systems 2 — Defines the components of a GIS; gives system functions and capabilities; examines weaknesses and strengths of GIS, DEMs, raster vs polygon systems, micro vs minicomputer implementations. Various applications are addressed. **4.5 credits**

AICO 620 Spatial Information Systems 3 — Examines a variety of data structures used in SIS. Develops a number of the common algorithms used in GIS development and gives the student an appreciation of the internals of a GIS. Students will understand the reasons for the strengths and weaknesses of the different systems. **4.5 credits**

AICO 621 Applied Mathematics 2 — A continuation of AICO 507. **4 credits**

CDCM 312 Graphics Programming Language — Graphics programming using INTERGRAPH's User Command Language (UC). Upon completion, students will be able to obtain and display user information in an INTERGRAPH work session, perform math calculations using UC, use the logic control structures of UC, access and change system wide INTERGRAPH settings, and write elementary graphics programs in UC. **3 credits**

COMPUTER AIDED ENGINEERING - ADVANCED MANUFACTURING OPTION

It is now a widely recognized fact that Canadian industrial and engineering practices are being radically transformed by the introduction of automation into the workplace. Nowhere is this transformation in greater evidence than the area of manufacturing techniques. A variety of tools - CAD (Computer Aided Design), CAM (Computer Aided Manufacturing), CIM (Computer Integrated Manufacturing) are available to the manufacturing technologist which, if properly exploited, lead to productivity increases.

Prerequisite

Applicants must have a Diploma of Technology equivalent to BCIT or better, or approval of the Associate Dean.

Applicants should have good communication and engineering skills, ability to reason in a logical manner and good disposition towards team work.

DIPLOMA PROGRAM

		Credit
AICO 501	Graphics Programming in FORTRAN 77	6.0
AICO 502	Systems Analysis	3.0
AICO 508	CNC Programming 1	9.0
AICO 510	3D Graphics and Design	8.0
AICO 512	Manufacturing Management	4.0

		Credit
AICO 601	File Handling and Data Base	9.0
AICO 605	Issues in Networking	4.5
AICO 611	Advanced Manufacturing Projects	6.0
AICO 613	Quality Control	3.0
AICO 614	Interactive Graphics NC Programming	12.0
AICO 615	Robot Applications	6.0
AICO 616	Computer Integrated Manufacturing	4.5

Course Descriptions

AICO 501 Graphics Programming in FORTRAN 77 — Introduction to FORTRAN programming. Emphasis will be on the solution of engineering problems and theory of CAD systems using structured programming techniques. At the completion of the course the student will understand how a simple CAD system is implemented. Prerequisite: CDCM 101 and CDCM 201 or equivalent. **6 credits**

AICO 502 Systems Analysis — Introduction to standard problem analysis tools: flow charting, Nassi-Schneidermann, decision tables, systems analysis tools, flow graphs, structure charts, and data flow analysis, scheduling and CP methodology. **3 credits**

AICO 508 CNC Programming — Introduces the student to current CNC and Robot languages such as APT and VAL. Investigates the integrated manufacturing centre. Special emphasis on exposure to CNC machines, model milling machines and lathes, drill presses, and 2 1-2 axis milling machines. **9 credits**

AICO 510 3D Graphics and Design — This concentrated CAD course will give the student extensive hands-on practice on leading edge, micro-based CAD equipment. Both the AutoCAD system and ComputerVisions MicroCAD packages will be used. 2D drafting, 3D wire frame models, and surface modeling. **8 credits**

AICO 512 Manufacturing Management — At the completion of this course, students will be familiar with techniques, models, procedures and philosophies for managing a manufacturing process. **4 credits**

AICO 601 File Handling and Data Base — Sequential, direct and keyed indexed file handling. Introduction to data base systems: hierarchical, network and relational. Stress on microbased systems and engineering applications. Inventory control, BOM, etc. Discussion of DB and its impact in an integrated DP environment. Prerequisite: AICO 501. **9 credits**

AICO 605 Issues in Networking — Communication between computers. Networking theory and practice. Distributed processing with a special emphasis on microcomputers. Software management of LAN systems. Theory of ETHERNET and ISO standards. **4.5 credits**

AICO 611 Advanced Manufacturing Projects — At the completion of this course the student will be able to analyze the causes of a CIM related problem in an industrial setting and prepare a written report describing a feasible solution to the problem. **6 credits**

AICO 613 Quality Control — Provides the student with a concentrated applications-focused overview of the fundamentals of statistical process control. **3 credits**

AICO 614 Interactive Graphics NC Programming — Automatic tool path takeoff from a CAD model. Exposure to production model CNC milling machines and lathes. Software tools will be popular microbased systems. **12 credits**

AICO 615 Robot Applications — Theory and practice in automated manipulators and servers. Multi-axis arms, painters, welding units, pick and place devices. Programming methodologies. Effective selection of devices. **6 credits**

AICO 616 Computer Integrated Manufacturing — This course is the capstone course of the advanced manufacturing management program. The CIM course has been designed to integrate and expand on topics covered in the other courses in the program. **4.5 credits**

COMPUTER AIDED ENGINEERING - RESOURCE PROCESSING OPTION

Computers are changing the way we do business: one of the major areas of automation has been in the means used for the processing of our natural resources.

In the past, this area of automation has been left in the hands of computer experts and automation specialists. The end users of the technology: forestry, mining and mechanical production technologists and engineers, have been hard pressed to stay current with these techniques. The program will attempt to address this problem by allowing these technologists to upgrade their existing skills with a comprehensive understanding of how computer techniques can be applied to many phases of natural resource processing.

Prerequisites

Applicants must have a Diploma of Technology equivalent to BCIT or better, or approval of the Associate Dean.

Applicants should have good communication and engineering skills, ability to reason in a logical manner and good disposition towards team work.

DIPLOMA PROGRAM

		Credit
AICO 501	Graphics Programming in FORTRAN 77	6.0
AICO 502	Systems Analysis	3.0
AICO 504	Data Structures in C	6.0
AICO 506	Linear Algebra with Computer Applications	4.0
AICO 509	Technical Aspects of Process Control	5.0
AICO 511	Programmable Controllers	5.0
AICO 601	File Handling and Data Base	6.0
AICO 602	Systems Management	4.0
AICO 603	Systems Acquisitions	4.0
AICO 604	Real Time Systems	9.0
AICO 605	Issues in Networking	4.5
AICO 606	Advanced Software Systems	9.0
AICO 610	Systems Projects	9.0

Course Descriptions

AICO 501 Graphics Programming in FORTRAN 77 — Introduction to FORTRAN programming. Emphasis will be on the solution of engineering problems and theory of CAD systems using structured programming techniques. At the completion of the course the student will understand how a simple CAD system is implemented. Prerequisite: CDCM 101 and CDCM 201 or equivalent. **6 credits**

AICO 502 Systems Analysis — Introduction to standard problem analysis tools: flow charting, Nassi-Schneidermann, decision tables, systems analysis tools, flow graphs, structure charts, and data flow analysis, scheduling and CP methodology. **3 credits**

AICO 504 Data Structures in C — Introduction to C. Emphasis will be on the solution of problems solvable in a microcomputer environment; software package design and implementation, and programming techniques. Problems will be selected from polygon processing algorithms. Prerequisite: CDCM 101 or equivalent. **6 credits**

AICO 506 Linear Algebra with Computer Applications — Stress on techniques required for modeling and simulation. Transformations and projections. Practical applications implemented on computers. Discrete and stochastic models. Modeling packaged software versus modeling programs. Practical examples from the mining, petroleum, pulp and paper and manufacturing environments. Projects will be completed in higher level languages and-or a variety of simulation packages. **4 credits**

AICO 509 Technical Aspects of Process Control — Introduction to process control. Applications of process control in petrochemical and forestry industries. Hardware and software issues involved in process control. **5 credits**

AICO 511 Programmable Controllers — Introduction for the non-electrical specialist to PLC's. Ladder diagrams, electrical theory and programming. Discussion of selection criteria. **5 credits**

AICO 601 File Handling and Data Base — Sequential, direct and keyed indexed file handling. Introduction to data base systems: hierarchical, network and relational. Stress on micro-based systems and engineering applications. Inventory control, BOM, etc. Discussion of DB and its impact in an integrated DP environment. Prerequisite: AICO 501. **9 credits**

AICO 602 Systems Management — Issues related to the management of computer systems: backup strategies, security issues, system utilization measures, system accounting, vendor liaison, preventive maintenance scheduling. Stress on micro and minicomputer support. **3 credits**

AICO 603 Systems Acquisitions — Documentation required for the acquisition of automating equipment. Cost-benefit analysis. Analysis of organizational issues. Identifying scope of automation. Impact of implementation on existing structures. **3 credits**

AICO 604 Real Time Systems — Fundamentals of Real Time Systems development. Signal interpretation. Peripheral and sensor interfaces. Integrity checks. Audit trails. **9 credits**

AICO 605 Issues in Networking — Communication between computers. Networking theory and practice. Distributed processing with special emphasis on microcomputers. Software management of LAN systems. Theory of ETHERNET and ISO standards. **4.5 credits**

AICO 606 Advanced Software Systems — Point of entry systems. Integrated process control systems. Inventory control. Students will attempt the design and development of large software systems. Examples drawn from engineering and industrial systems with emphasis on integration with Management Information Systems. **9 credits**

AICO 610 Systems Projects — Students working in small groups will propose and develop projects relevant to their disciplines. Groups will be interdisciplinary and will act under the guidance of selected faculty and-or industrial experts. Presentations, documentation and development will be to industry standards. **9 credits**

COMPUTER AIDED ENGINEERING - CAD PROGRAMMING

CAD (Computer Aided Design) is becoming a commonplace tool in the offices of general engineering companies, architects offices and mapping agencies. This program has as its objective the development of a computer skill set that will allow engineers and technologists to take full advantage of this emerging technology.

CAD has important applications in the production, supervision, distribution and storage of computerized drawings. CAD design tools are used in the development of machines, tools, buildings and structures. Associated nongraphic information can be stored and retrieved affecting a wide range of corporate data bases. This challenging field offers exciting opportunities for the modern technologist.

Prerequisite

A National Diploma of technology in a relevant engineering discipline (mechanical, C&S, building, mining, geology, etc.), or an engineering degree.

Applicants should have good communication and engineering aptitudes, ability to reason in a logical manner and a good disposition towards team work.

DIPLOMA PROGRAM

		Credit
AICO 214	AutoCAD 2	3.0
AICO 313	AutoLISP Programming	3.0
AICO 501	Graphics Programming in FORTRAN 77	6.0
AICO 502	Systems Analysis	3.0
AICO 503	CAD and Graphics	4.0
AICO 504	Data Structures in C	6.0
AICO 506	Linear Algebra with Computer Applications	4.0
AICO 510	3D Graphics and Design	8.0
AICO 601	File Handling and Data Base	9.0
AICO 602	Systems Management	3.0
AICO 603	Systems Acquisitions	3.0
AICO 605	Issues in Networking	4.5
AICO 622	CAD Project	9.0
CDCM 312	Graphics Programming Language	3.0
CDCM 404	CAD Design	4.5
MATH 460	Mathematics for CAD-CAM	6.0

Course Descriptions

AICO 214 AutoCAD 2 — A continuation of AutoCAD 1. Topics covered are: annotations, dimensioning, screen menu creation, plotting and digitizing. Class assignments may be tailored to one of three discipline areas: mechanical drafting, architectural drafting, or electrical drafting, depending upon students background. Prerequisite; AICO 213 or equivalent. **3 credits**

AICO 313 AutoLISP Programming — Introduction to AutoLISP. Upon completion students will be able to obtain and display user information in an AutoCAD work session, perform math calculations using AutoLISP, use the logic control structures of AutoLISP, access and change system-wide AutoCAD settings, and write elementary graphic programs in AutoLISP. Prerequisite: AICO 214 or CDCM 214, and an introductory programming language or equivalent. **3 credits**

AICO 501 Graphics Programming in FORTRAN 77 — Introduction to FORTRAN programming. Emphasis will be on the solution of engineering problems and theory of CAD systems using structured programming techniques. At the completion of the

course, the student will understand how a simple CAD system is implemented. Prerequisite: CDCM 101 and CDCM 201 or equivalent. **6 credits**

AICO 502 Systems Analysis — Introduction to standard problem analysis tools: flow charting, Nassi-Schneidermann, decision tables, systems analysis tools, flow graphs, structure charts and data flow analysis, scheduling and CP methodology. **3 credits**

AICO 503 CAD and Graphics — This concentrated CAD course will give the student extensive hands-on practice on leading edge CAD equipment. Students will be given exposure to both 2D and 3D graphics with examples drawn from the earth sciences. **4 credits**

AICO 504 Data Structures in C — Introduction to C. Emphasis will be on the solution of problems solvable in a microcomputer environment; software package design and implementation, and programming techniques. Problems will be selected from polygon processing algorithms. Prerequisite: CDCM 101 or equivalent. **6 credits**

AICO 506 Linear Algebra with Computer Applications — Stresses techniques required for modeling and simulation. Transformations and projections. Practical applications implemented on computers. Discrete and stochastic models. Modeling packaged software versus modeling programs. Practical examples from the mining, petroleum, pulp and paper and manufacturing environments. Projects will be completed in higher level languages and-or a variety of simulation packages. **4 credits**

AICO 510 3D Graphics and Design — This concentrated CAD course will give the student extensive hands-on practice on leading edge micro based CAD equipment. Both the AutoCAD system and ComputerVisions MicroCAD packages will be used. 2D drafting, 3D wire frame models, and surface modeling. **8 credits**

AICO 601 File Handling and Data Base — Sequential, direct and keyed indexed file handling. Introduction to data base systems: hierarchical, network and relational. Stress on micro-based systems and engineering applications. Inventory control, BOM, etc. Discussion of DB and its impact in an integrated DP environment. Prerequisite: AICO 501. **9 credits**

AICO 602 Systems Management — Issues related to the management of computer systems: backup strategies, security issues, system utilization measures, system accounting, vendor liaison, preventive maintenance scheduling. Stress on micro and minicomputer support. **3 credits**

AICO 603 Systems Acquisitions — Documentation required for the acquisition of automating equipment. Cost-benefit analysis. Analysis of organizational issues. Identifying scope of automation. Impact of implementation on existing structures. **3 credits**

AICO 605 Issues in Networking — Communication between computers. Networking theory and practice. Distributed processing with special emphasis on microcomputers. Software management of LAN systems. Theory of ETHERNET and ISO standards. **4.5 credits**

AICO 622 CAD Project — Student managed projects with applications in students' area of interest. Projects integrate programming in graphics, data base practice and engineering problem solving. Prerequisite: permission of the department. **9 credits**

CDCM 312 Graphics Programming Language — Graphics programming using INTERGRAPH's User Command Language (UC). Upon completion, students will be able to obtain and display user information in an INTERGRAPH work session, perform math calculations using UC, use the logic control structures of UC, access and change system wide INTERGRAPH settings, and write elementary graphics programs in UC. **3 credits**

CDCM 404 CAD Design — Understanding how computers can help in the design process. Interaction with software packages using surfaces and-or solids modeling. Prerequisite: CDCM 304. **4.5 credits**

MATH 460 Mathematics for CAD-CAM — Geometric modeling including cubic splines, bezier curves and surface patches. Matrix approach to transformations. Raster algorithms and techniques including curve generation, halftoning and other special effects. Kinematics and simulation. Solid modeling. Overview of finite element method. Selected algorithms from cartography. Interactive computer graphics concerns. **6 credits**

Mechanical Systems Technology

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The graduate of this program will be able to pursue a career in a field of Mechanical Systems for residential, commercial, institutional and industrial buildings. Graduates will be prepared for the design and installation of water supply, drainage, fire protection, refrigeration, heating, ventilating and air conditioning.

Job Opportunities

Mechanical engineers, working in liaison with architects, structural engineers and electrical engineers, oversee design work on systems for most large buildings. As support staff, trained mechanical systems technologists who can function with minimum supervision as designers, specification writers, field inspectors and drafting personnel, are required. Mechanical contractors bid competitively for mechanical systems work and require trained systems technologists as estimators and project management assistants.

Systems in newly completed and existing buildings have been receiving more attention in recent years. Services in this area include system management programs to optimize energy efficiency; testing and balancing of new systems; and physical changes to existing systems to realize greater fuel economy.

The Program

Course material encompasses water supply, drainage, fire protection, refrigeration, heating, ventilating and air conditioning, backed by support courses which include fluid engineering, thermodynamics, engineering economy and computer science. In recent years, the pursuit of greater energy efficiency and safety in buildings has placed new demands on the systems base from which the graduate can effectively participate in achieving these objectives.

It is anticipated that this program will be accredited by the Applied Science Technologists and Technicians of British Columbia.

Prerequisites

Algebra 12 and Physics 11 are course requirements for this program. Applicants should have a solid academic background and good communication skills, be able to apply ideas to practical situations and to work effectively with people in a team situation. Supervisory posts may be assumed after appropriate job situation. Supervisory posts may be assumed after appropriate job experience.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN MECHANICAL SYSTEMS

		Credit
CDCM 101	Computer Science 1 OR	
MATH 125	BASIC 1 Intro to Microcomputers-IBM PC	3.0
COMM 175	Letters and Memos	3.0
MATH 101	Technical Mathematics 1	3.0
MATH 102	Technical Mathematics 2	3.0
MECH 100	Mechanical Drafting 1	3.0
MECH 104	Statics	4.0
MECH 107	Introduction to Thermal Processes	3.0
MECH 208	Dynamics	6.0
MECH 303	Fluid Mechanics	3.0
MSYS 103	Plumbing	4.0
MSYS 200	Systems Drafting 2	6.0
MSYS 212	Heating and Ventilation 1	3.0

CERTIFICATE OF TECHNOLOGY IN MECHANICAL SYSTEMS

Prerequisite: Intermediate Certificate of Technology in Mechanical Systems.

COMM 183	Technical Reports	3.0
MECH 466	Fluid Systems	2.5
MSYS 301	Heating and Ventilation 2	3.0
MSYS 400	Air Conditioning Systems	10.5
MSYS 403	System Noise Control	3.0
	Electives	7.5

DIPLOMA OF TECHNOLOGY IN MECHANICAL SYSTEMS

Prerequisite: Certificate of Technology in Mechanical Systems

BLDG 152	Construction 1	6.0
ELEX 255	Instrumentation for Mechanical	4.0
MATH 203	Technical Mathematics 3	6.0
MATH 349	Numerical Methods for Mechanical	4.0
MECH 206	Mechanics of Materials	6.0
MECH 302	Thermal Engineering 1	4.0
MECH 460	Engineering Economy	2.0
MSYS 405	Maintenance	3.0
MSYS 406	Fire Protection	3.0
OPMT 460	Industrial Engineering	4.0
	Electives	33.0

Optional-Elective Courses

		Credit
AICO 213	AutoCAD 1	3.0
AICO 214	AutoCAD 2	3.0
CDCM 213	Intergraph 1	3.0
CDCM 214	Intergraph 2	3.0
ELEC 250	Electrical Systems	4.0
MATH 449	Statistics and Quality Control	6.0
MATH 494	Computer Graphics for Mechanical	4.5
MECH 106	Manufacturing Processes 1	4.0
MECH 320	Fluid Power 1	3.0
MECH 404	Thermal Engineering 2	6.0
MECH 410	Mechanical Estimating	3.0
MECH 420	Fluid Power 2	4.5
MECH 432	Automatic Sprinkler System Design 1	3.0
MECH 433	Automatic Sprinkler System Design 2	4.5
MSYS 404	Mechanical Equipment	6.0
PHYS 133-134	Physics 2	6.0

Course Descriptions

AICO 213 AutoCAD 1 — Microcomputer based CADD using the latest release of AutoCAD software on IBM ATs. The course includes an introduction to CAD machine components, architecture, logon procedure and displays. An introduction to AutoCAD functions includes: windows, views, measuring, element placement, and advanced geometric construction. Prerequisite: MECH 100 or MECH 140 or appropriate drafting experience. **3 credits**

AICO 214 AutoCAD 2 — A continuation of AICO 213. Topics covered are annotations, dimensioning; screen menu creation, plotting and digitizing. Class assignments may be tailored to one of four discipline areas: mechanical, architectural, survey or electrical depending on student's background. Prerequisite: AICO 213 or equivalent. **3 credits**

BLDG 152 Construction 1 — Introduces the basic principles of building construction. Develops skills to produce a basic set of construction working drawings. Topics include site layout, foundation details, western wood frame detailing, preparation of a partial set of working drawings for a single family residence. A list of necessary drafting equipment will be issued on the first evening. **6 credits**

CDCM 101 Computer Science 1 — Introduction to computer science and programming using BASIC. Emphasis will be on structured problem solving. Applications drawn from the engineering disciplines. **3 credits**

CDCM 213 Intergraph 1 — Rudiments of computer aided drafting. Machine log-on procedures, simple 2-D drawings, orthographic projection, dimensioning, annotations. Prerequisite: MECH 100 or MECH 140 or appropriate drafting experience. **3 credits**

CDCM 214 Intergraph 2 — A continuation of CDCM 213. Customizing a CAD system using cell libraries and tablet menus. Prerequisite: CDCM 213 or equivalent. **3 credits**

COMM 175 Letters and Memos — Covers communication inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered. **3 credits**

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphics and formal report format. Persuasive presentations are included. **3 credits**

ELEC 250 Electrical Systems — Students learn how to plan the electrical system for a specific building with the electrical designer. How to read and work with common electrical drawings and specifications, understand single and three-phase systems and power factor correction for minimal operations costs; recognize and avoid building designs that create costly electrical design problems. Prerequisite: ELEC 150. **4 credits**

ELEX 255 Instrumentation for Mechanical — Topics include basic devices used for measuring pressure, temperature, level, density and flow, instrument static and dynamic performance, instrument application to industrial processes. Design of pneumatic and hydraulic measurement and control equipment using high-gain amplifiers and negative feedback. Basic principles of automatic control, process, dynamic behavior and controllability. On-off, proportional, integral and derivative control. Control strategy. Ratio, cascade, multivariable and feedforward systems. Introduction to computer control. **4 credits**

MATH 101 Technical Mathematics 1: Trigonometry—A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic and semilogarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 125 BASIC 1: An Introduction to Microcomputers IBM PCs — Designed for engineering technology students with no previous BASIC programming or microcomputer experience. Topics include computer terminology, hardware, disk operating system, BASIC language concepts (input-output, BASIC arithmetic and functions, relational operators, branching statements, subroutines and graphics statements). **3 credits**

MATH 203 Technical Mathematics 3: Calculus — An introductory course in calculus and its technical applications involving the differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions. The course emphasizes the application of calculus to engineering technology problems. Prerequisite: MATH 101 and 102. **6 credits**

MATH 204 Technical Mathematics 4: Calculus — A continuation of MATH 203. Topics include further work on integration, partial differentiation, an overview of Maclaurin, Taylor and Fourier series and the solution of differential equations. Special consideration is given to the use of Laplace Transforms. Prerequisite: MATH 203. **6 credits**

MATH 349 Numerical Methods for Mechanical — Numerical integration, solution of algebraic and transcendental equations by iterative methods, numerical solution of differential equations and numerical differentiation. Matrix approach to 2-D and 3-D transformations with application to computer graphics. Gauss-Jordan method applied to the solution of systems of linear equations. Linear programming using the simplex method and the transportation problem. Prerequisite: MATH 204 or MATH 249.**4 credits**

MATH 494 Computer Graphics for Mechanical — Introduces students to interactive BASIC, and concepts of programming in two and three dimensions. Students experience hands-on practice with computer graphics systems. Prerequisite: MATH 349. **4.5 credits**

MECH 100 Mechanical Drafting 1 — Techniques of producing and reading mechanical drawings using standard format and the development of basic skills in applying these techniques. Use of instruments, line work, lettering, geometric constructions, isometrics, with emphasis placed on orthographic projection, auxiliary views, sections, dimensions and working drawings. **3 credits**

MECH 104 Statics — Vectors, force systems, concurrent and coplanar, nonconcurrent and coplanar. Graphical representation and solutions. Ideas of equilibrium. Mathematical representation of equilibrium. Analysis of frames. Statically determined structures. Redundancies. Beams, principles of moments and centroids. Second moment of area. Prerequisite: MATH 101. **4 credits**

MECH 106 Manufacturing Processes 1 — A basic orientation course which provides the student with practice in metal removal, and a study of related theory. **4 credits**

MECH 107 Introduction to Thermal Processes — Introduction to heat and fluid processes. Steam tables, first law of thermodynamics. Basic steam power and refrigeration cycles. **3 credits**

MECH 208 Dynamics — Kinematics: basic equation of motion, motion diagrams, trajectories. Kinetics: Newton's Laws, inertia, rectilinear and rotational kinetics, systems of bodies. Work, energy, power and efficiency, impulse and momentum. Prerequisite: MECH 104. **6 credits**

MECH 302 Thermal Engineering 1 — First and second law of thermodynamics. Steady and non-flow energy equations, specific heats of gases, vapor tables, gas and vapor processes. Carnot and Rankine cycles. Air compressors. Heat transfer.Prerequisite: MECH 107. **4 credits**

MECH 303 Fluid Mechanics — Basic principles of fluid properties, energy losses, Reynold's number, Moody diagram, flow measuring devices, dynamics of flow lift and drag. Fluid statics. Prerequisite: MECH 208. **3 credits**

MECH 320 Fluid Power 1 — Provides an understanding of pneumatic control systems. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of simple and sequential control systems. Sizing calculations for system components are covered. **3 credits**

MECH 404 Thermal Engineering 2 — Mixtures of gases and vapors, psychrometry, air conditioning, combustion processes and nozzle flow; analysis of steam and gas turbines and jet propulsion, air standard cycles. Energy management including heat recovery, cogeneration, equipment development, peak power demands, energy costs. Practical lab investigations by students. Prerequisite: MECH 302. **6 credits**

MECH 410 Mechanical Estimating — Basic theories and principles of estimating construction costs and direction for organizing facts from bidding documents. Measurement and pricing using price master and labor calculator, for ventilation, domestic hot water heating and sanitary drainage systems. **3 credits**

MECH 420 Fluid Power 2 — Provides an understanding of hydraulic control systems and an introduction to fluidic control systems and control logic. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of a variety of hydraulic control systems. Sizing calculations for system components are also covered. Prerequisite: MECH 320. **4.5 credits**

MECH 432 Automatic Sprinkler Systems Design 1 — For persons involved in engineering design, supervision or inspection of commercial and industrial automatic sprinkler systems to gain an understanding of pipe schedule systems and water supply system analysis. The course examines the basics of wet and dry pipe systems; NFPA Standard #13; system components and applications; basic hydraulics of piping systems; water supply system analysis and tests with various examples; quick opening devices. Classroom lectures may be augmented by a Saturday field trip to take water flow tests. Students require an electronic calculator with XY function. Prerequisite: MECH 222 or MECH 303. **3 credits**

MECH 433 Automatic Sprinkler Systems Design 2 — Advanced detailed instruction for persons involved in fire service, engineering design, supervision or inspection of automatic sprinkler systems in commercial and industrial buildings. The course

examines deluge systems; pre-action systems; combined dry pipe and pre-action systems; water spray systems; special systems; hydraulics of sprinkler systems including tree, looped and gridded systems; computerized calculations; economical design considerations; water tanks; fire pumps, booster pumps, jockey pumps; maintenance of systems. Prerequisite: MECH 432. **4.5 credits**

MECH 460 Engineering Economy — Emphasizes the importance of making sound economic decisions when faced with alternative methods of solving technical problems. The course material provides the basic skills and concepts required to analyze comparative costs and to understand the time value of money (interest), inflation, depreciation, running costs, salvage value and tax considerations. **2 credits**

MECH 466 Fluid Systems — Dimensionless parameters. Pump characteristics, operation and maintenance. Cavitation. Air movement and supply, fan performance and characteristics, duct sizing and networks. Prerequisite: MECH 303. **2.5 credits**

MSYS 103 Plumbing — Topics include codes, basic engineering principles and graphic presentations related to plumbing systems design, load calculations, piping methods, sizing of system components for storm and sanitary drainage and water distribution. Some drafting skill will be required.Prerequisite: MECH 100 or MECH 140. **4 credits**

MSYS 200 Systems Drafting 2 — Further topics in mechanical drafting practices and projects on systems in buildings and plants. Prerequisite: MECH 100 or MSYS 100. **6 credits**

MSYS 212 Heating and Ventilation 1 — Covers the principles involved with heat loss in buildings and practises of heating and ventilation, encompassing a study of system components and design procedures. These will then be applied to the preparation of heat loss calculations and working drawings for a heating-ventilation system. Prerequisite: MECH 107. **6 credits**

MSYS 301 Heating and Ventilation 2 — Principles and practices of heating and ventilation for residential, commercial and institutional buildings. Instructional material encompasses fuel oil, gas and solar heat energy sources; fuel handling heating boilers; solar collectors; building heat loss evaluation; building ventilation, load evaluation; space air distribution; ducted air distributions; warm air heating. Prerequisite: MSYS 212. **3 credits**

MSYS 400 Air Conditioning Systems — Part 3 of a three-part course on heating, ventilation and air conditioning. Properties of air extending use of psychrometric chart to air conditioning comfort criteria and examination of air conditioning processes; refrigeration for air conditioning, encompassing evaporator, compressor, condensor and expansion valve performance characteristics and selection; air conditioning systems encompassing representative unitary, constant volume and variable volume systems. Prerequisite: MECH 301. **10.5 credits**

MSYS 403 System Noise Control — Lab assignments are arranged to solve fundamental problems of sound propagation; use mechanical equipment sound performance data to select equipment to satisfy acceptable noise levels, and to recognize and arrive at solutions to potential mechanical system noise problems in the design stage. Prerequisite: PHYS 216 or PHYS 206 or PHYS 134. **3 credits**

MSYS 404 Mechanical Equipment — A study of drive configurations, prime movers, fans, pumps, heat exchangers, pressure vessels from an application, specifications, maintenance and safety point of view. Prerequisite: ELEC 257. **6 credits**

MSYS 405 Maintenance — The elements of this course are basic systems, preventative maintenance and budget costs, maintenance planning, estimating, scheduling, measurement and inventory.Prerequisite: OPMT 145. **3 credits**

MSYS 406 Fire Protection — Includes mechanical fire protection systems; regulations and codes of practice; building hazard classification; stand pipe and sprinkler systems; systems components and design to NFPA 13. Prerequisite: MECH 303. **3 credits**

OPMT 460 Industrial Engineering — Covers problem-solving and decision making approaches to project installation. Topics include: PERT networks, CPM barcharts, work measuring techniques in planning and project installations, method study techniques, acceptable management principles in labor supervision. Prerequisite: TCOM 210 or COMM 183. **4 credits**

PHYS 133 Physics 2 Part 1 — Physics 2, with Physics 1, satisfies the knowledge required in various engineering and related technologies. Topics include sound, light, basic electricity and magnetism, basic semiconductor theory, atomic and nuclear phenomena. Mathematical treatment requires algebra and trigonometry and possibly some calculus. Prerequisite: PHYS 132 or MECH 208. **3 credits**

PHYS 134 Physics 2 Part 2 — See PHYS 133. Prerequisite: PHYS 133. **3 credits**

Mechanical Technology

Eric A. Morse, P.Eng., Program Head
Telephone:432-8638
Program Advisor
Telephone: 432-8467

The mechanical technologist may be involved in the design, construction and installation of machines and mechanical devices, or in the production side of manufacturing. It is a field of tremendous scope in that specialists must be able to analyze problems, propose efficient technical solutions, implement these solutions and evaluate the results.

Job Opportunities

Graduates can choose from a diversity of work situations. Consulting engineering offices employ mechanical technologists as design draftsmen for machinery, steelwork, piping, power plants and installation. Others may choose to take up positions in plant engineering offices, production departments or estimating departments. Additional opportunities exist in testing, inspection, installation, service and technical sales. Supervisory posts may be assumed after appropriate job experience.

The Mechanical Technology program is accredited by the Applied Science Technologists and Technicians of BC.

Prerequisites

Algebra 12 and Physics 11 are course requirements for this program. Applicants should have a solid academic background and good communications skills, be able to apply ideas in practical situations and be able to work effectively with people in a team situation.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN MECHANICAL TECHNOLOGY

		Credit
CDCM 101	Computer Science 1 OR	
MATH 125	BASIC 1: An Introduction to IBM PC	3.0
CHSC 156	Metallurgy 1	6.0
COMM 175	Letters and Memos	3.0
MATH 101	Technical Mathematics 1	3.0
MATH 102	Technical Mathematics 2	3.0
MECH 100	Mechanical Drafting 1	3.0
MECH 104	Statics	4.0
MECH 106	Manufacturing Processes 1	4.0
MECH 200	Mechanical Drafting 2	4.0
MECH 206	Mechanics of Materials	6.0
MECH 208	Dynamics	6.0
MECH 240	Manufacturing Processes 2	6.0

CERTIFICATE OF TECHNOLOGY IN MECHANICAL TECHNOLOGY

Prerequisite: Intermediate Certificate of Technology in Mechanical Technology

		Credit
COMM 183	Technical Reports	3.0
MATH 203	Technical Mathematics 3	6.0
MECH 107	Thermal Processes	3.0
MECH 460	Engineering Economy	2.0
PHYS 133-134	Physics 2	6.0
	Electives	10.0

DIPLOMA OF TECHNOLOGY IN MECHANICAL TECHNOLOGY

Mandatory courses

		Credit
COMM 160	Business and Technical Communication	3.0
ELEX 257	Electrical Equipment	4.0
MATH 204	Technical Mathematics 4: Calculus	6.0
MATH 349	Numerical Methods for Mechanical	4.0
MECH 301	Machine Design 1	4.0
MECH 302	Thermal Engineering 1	4.0
MECH 303	Fluid Mechanics	3.0
MECH 304	Manufacturing Processes 3	4.0
MECH 320	Fluid Power 1	3.0
MECH 401	Machine Design 2	8.5
MECH 420	Fluid Power 2	4.5
MECH 466	Fluid Systems	2.5
	Electives	24.5

Optional-Elective Courses

		Credit
AICO 213	AutoCAD 1	3.0
AICO 214	AutoCAD 2	3.0
CDCM 213	Intergraph 1	3.0
CDCM 214	Intergraph 2	3.0
ELEX 255	Instrumentation for Mechanical	4.0
MATH 125	BASIC 1: An Introduction to IBM PC	3.0
MATH 449	Statistics and Quality Control	6.0
MATH 494	Computer Graphics for Mechanical	4.5
MECH 402	Theory of Mechanisms	6.0
MECH 404	Thermal Engineering 2	6.0
MECH 413	Tool Design	4.0
MECH 420	Fluid Power 2	4.5
MECH 432	Automatic Sprinkler System Design 1	3.0
MECH 433	Automatic Sprinkler System Design 2	4.5
MECH 444	Metrology	4.5
MECH 445	CNC	4.5
MECH 466	Fluid Systems	2.5
MSYS 103	Plumbing	4.0
MSYS 212	Heating and Ventilation 1	6.0
MSYS 301	Heating and Ventilation 2	3.0
MSYS 400	Air Conditioning Systems	10.5
OPMT 182	Operations Management	6.0
OPMT 103	Quality Control Methods 1	3.0
OPMT 203	Quality Control Methods 2	3.0
OPMT 411	Production Engineering Management	6.0
ROBT 470	CNC and Robotic Languages	4.0

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN NAVAL ARCHITECTURE

		Credit
CDCM 101	Computer Science 1	3.0
COMM 160	Business and Technical Communication OR	
COMM 175	Letters and Memos OR	
COMM 183	Technical Reports	3.0
MATH 101	Technical Mathematics 1	3.0
MATH 102	Technical Mathematics 2	3.0
MECH 100	Mechanical Drafting 1	3.0
MECH 104	Statics	4.0
MECH 200	Mechanical Drafting 2	4.0
MECH 206	Mechanics of Materials	6.0
MECH 208	Dynamics	6.0
NAVL 150	Naval Architecture Introduction	3.0
NAVL 152	Naval Architecture Fundamentals	6.0
NAVL 253	Applied Naval Architecture	9.0
NAVL 300	Ship Systems	3.0

Course Descriptions

AICO 213 AutoCAD 1 — Microcomputer based CADD using the latest release of AutoCAD software on IBM ATs. The course includes an introduction to CAD machine components, architecture, logon procedure and displays. An introduction to AutoCAD functions includes: windows, views, measuring, element placement, and advanced geometric construction. Prerequisite: MECH 100 or MECH 140 or appropriate drafting experience. **3 credits**

AICO 214 AutoCAD 2 — A continuation of AutoCAD 1. Topics covered are annotations, dimensioning; screen menu creation, plotting and digitizing. Class assignments may be tailored to one of four discipline areas: mechanical, architectural, survey or electrical depending on student's background. Prerequisite: AICO 213 or equivalent. **3 credits**

CDCM 101 Computer Science 1 — Introduction to computer science and programming using BASIC. Emphasis will be on structured problem solving. Applications drawn from the engineering disciplines. **3 credits**

CDCM 213 Intergraph 1 — Rudiments of computer aided drafting. Machine log-on procedures, simple 2-D drawings, orthographic projection, dimensioning, annotations. Prerequisite: MECH 100 or MECH 140 or appropriate drafting experience. **3 credits**

CDCM 214 Intergraph 2 — A continuation of CDCM 213. Customizing a CAD system using cell libraries and tablet menus. Prerequisite: CDCM 213 or equivalent. **3 credits**

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communication in business and industry. It offers practical techniques for planning, organizing, selecting, and presenting information. Effective

business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures, and summaries. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 175 Letters and Memos — Covers communications inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered. **3 credits**

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphics and formal report format. Persuasive presentations are included. **3 credits**

ELEX 255 Instrumentation for Mechanical — Topics include basic devices used for measuring pressure, temperature, level, density and flow. Instrument static and dynamic performance. Instrument application to industrial processes. Design of pneumatic and hydraulic measurement and control equipment using high-gain amplifiers and negative feedback. Basic principles of automatic control, process, dynamic behavior and controllability. On-off, proportional, integral and derivative control. Control strategy. Ratio, cascade, multivariable and feedforward systems. Introduction to computer control. **4 credits**

ELEX 257 Electrical Equipment — An introduction to industrial electrical equipment. Topics include AC and DC motors and their application to electro-mechanical drive systems; protecting and controlling related equipment; sources of energy; transformation into primary and secondary voltage levels, distribution of power throughout the plant; switching; voltage control and power factor correction. **4 credits**

MATH 101 Technical Mathematics 1: Trigonometry — A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic and semilogarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 125 BASIC 1: An Introduction to Microcomputers IBM PCs - Designed for engineering technology students with no previous BASIC programming or microcomputer experience. Topics include computer terminology, hardware, disk operating system, BASIC language concepts (input-output, BASIC arithmetic and functions, relational operators, branching statements, subroutines and graphics statements). **3 credits**

MATH 203 Technical Mathematics 3: Calculus — An introductory course in calculus and its technical applications involving the differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions. The course emphasizes the application of calculus to engineering technology problems. Prerequisite: MATH 101 and 102. This course is scheduled to run in 89-90 and 91-92. It will not be offered in 88-89 or 90-91. **6 credits**

MATH 204 Technical Mathematics 4: Calculus — A continuation of MATH 203. Topics include further work on integration, partial differentiation, an overview of Maclaurin, Taylor and Fourier series and the solution of differential equations. Special consideration is given to the use of Laplace Transforms. Prerequisite: MATH 203. This course will be offered every third year only. The next offering will be in 89-90. **6 credits**

MATH 349 Numerical Methods for Mechanical — Numerical integration, solution of algebraic and transcendental equations by iterative methods, numerical solution of differential equations and numerical differentiation. Matrix approach to 2-D and 3-D transformations with application to computer graphics. Gauss-Jordan method applied to the solution of systems of linear equations. Linear programming using the simplex method and the transportation problem. Prerequisite: MATH 204 or MATH 249. **4 credits**

MATH 449 Statistics and Quality Control for Mechanical — Organization and graphical presentation of data, frequency distributions and measures of central tendency, variation and other measures. Probability theory and laws. Random variables, discrete and continuous theoretical distributions. Sampling, estimation and hypothesis testing with both large and small samples. Method of least squares, regression and correlation. Control chart concepts and application, acceptance sampling. Chi-squared tests. Non-parametric statistics. Prerequisite: MATH 149 or MATH 203. **6 credits**

MATH 494 Computer Graphics for Mechanical — Introduces students to interactive BASIC, and concepts of programming in two and three dimensions. Students experience hands-on practice with computer graphics systems. **4.5 credits**

MECH 100 Mechanical Drafting 1 — Techniques of producing and reading mechanical drawings using standard format and the development of basic skills in applying these techniques. Use of instruments, line work, lettering, geometric constructions, isometrics, with emphasis placed on orthographic projection, auxiliary views, sections, dimensions and working drawings. **3 credits**

MECH 104 Statics — Vectors, force systems, concurrent and coplanar, nonconcurrent and coplanar. Graphical representation and solutions. Equilibrium: mathematical representation of equilibrium. Analysis of frames. Statically determined structures. Redundancies. Beams, principles of moments and centroids. Second moment of area. Prerequisite: MATH 101. **4 credits**

MECH 106 Manufacturing Processes 1 — A basic orientation course which provides the student with practice in metal removal, and a study of related theory. **4 credits**

MECH 107 Introduction to Thermal Processes — Introduction to heat and fluid processes. Thermal properties of liquids, gases and mixtures. Steam tables, first law of thermodynamics. Basic steam power and refrigeration cycles. Dimensions and units. Perfect gas laws and applications. **3 credits**

MECH 140 Drafting Fundamentals — An introductory course for persons with little or no experience in graphics. Students are required to purchase drafting equipment and supplies on the first night of class. Students learn to produce and read simple drawings. Topics include scales, geometric constructions, basic orthographics, detail interpretation, line visibility, dimensioning, auxiliary views, true shape, inclined and skewed surfaces, sections, pictorials, working drawings and freehand sketches. **3 credits**

MECH 200 Mechanical Drafting 2 — Advanced techniques including limits and fits, isometric and orthographic single line piping diagrams, descriptive geometry, intersections, development, gears, threads and fasteners, weld symbols, working drawings and projects. Prerequisite: MECH 100. **4 credits**

MECH 206 Mechanics of Materials — Stress, strain and deflection. Tension, compression, shear, torsion, deflection and buckling of material under load. Beams, columns, shafts, thin and thick-walled cylinders, riveted and welded joints, combined stress situations. Prerequisite: MECH 104. **6 credits**

MECH 208 Dynamics — Kinematics: basic equation of motion, motion diagrams, trajectories. Kinetics: Newton's Laws, inertia, rectilinear and rotational kinetics, systems of bodies. Work, energy, power and efficiency, impulse and momentum. Prerequisite: MECH 104. **6 credits**

MECH 214 Drafting: Structural — A general insight into graphical aspects of structural problems for managers, construction workers, foremen, planners and estimators. Students study the application of drawing skills and techniques to structural engineering. Drawing assignments relate to wood frame, reinforced concrete and steel structures. Prerequisite: MECH 140. **3 credits**

MECH 240 Manufacturing Processes 2 — Machine tool operations, production processing and economics, evaluation of production features, maintenance. Metal joining processes and equipment, production costs and design applications. Prerequisite: MECH 106. **6 credits**

MECH 301 Machine Design 1 — An introductory course in machine design, with emphasis on elementary design and analytical procedures for machine components. The course covers theories of failure, combined stresses, stress concentration, fatigue phenomena, welded and threaded connections, shafts, belt drives, geometric and force relationships in spur gearing, and an introduction to various other machine elements. Problems are handled in both S.I. and British units. Prerequisite: MECH 206 and MECH 208 or MECH 219 and MECH 217. **4 credits**

MECH 302 Thermal Engineering 1 — First and second law of thermodynamics. Steady and non-flow energy equations, specific heats of gases, vapor tables, gas and vapor processes. Carnot and Rankine cycles. Air compressors. Heat transfer.Prerequisite: MECH 107. **4 credits**

MECH 303 Fluid Mechanics — Basic principles of fluid properties, energy losses, Reynold's number, Moody diagram, flow measuring devices, dynamics of flow lift and drag. Fluid statics. Prerequisite: MECH 208. **3 credits**

MECH 304 Manufacturing Processes 3 — A study of hot and cold fabrication processes; materials and machines, quantities-costs will be investigated. An introduction to CNC programming by both manual and punched tape inputs. **4 credits**

MECH 320 Fluid Power 1 — Provides an understanding of pneumatic control systems. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of simple and sequential control systems. Sizing calculations for system components are covered. **3 credits**

MECH 401 Machine Design 2 — The sequel to MECH 301, covers couplings, brakes and clutches; anti-friction and journal bearings; helical, bevel and worm gearing; power screws, springs and machine frame components; introduction to mechanical vibrations, with emphasis on critical speeds of rotating bodies. An introductory treatment of bulk materials handling systems is also included. Problems are handled in both S.I. and British units. Prerequisite: MECH 301. **8.5 credits**

MECH 402 Theory of Mechanisms — A course in the theory of mechanisms (kinematics) with emphasis on graphical methods to relate displacement, velocity, and acceleration in the components of mechanisms. The course covers both analytical and design procedures with applications to mechanisms such as slider-cranks, four-bar linkages, planetary gear trains, cams, and intermittent motion devices. Graphical differentiation is treated in detail for various types of cam follower motions. A comprehensive treatment of Coriolis acceleration is included. Mechanisms in which one or more links can change length (e.g., hydraulic cylinder members) are also investigated. Prerequisite: MECH 208. **6 credits**

MECH 404 Thermal Engineering 2 — Mixtures of gases and vapors, psychrometry, air conditioning, combustion processes and nozzle flow; analysis of steam and gas turbines and jet propulsion, air standard cycles. Energy management including heat revovery, cogeneration, equipment development, peak power demands, energy costs. Practical lab investigations by students.Prerequisite: MECH 302. **6 credits**

MECH 410 Mechanical Estimating — Basic theories and principles of estimating construction costs and direction for organizing facts from bidding documents. Measurement and pricing using price master and labor calculator, for ventilation, domestic hot water heating and sanitary drainage systems. **3 credits**

MECH 413 Tool Design — The course includes introduction to design of special purpose tooling, process planning, design considerations of various types of jigs, fixtures, gauges, metal-cutting dies, feed mechanisms, presses, scrap strip layout, standard parts. Assignments will have to be worked on away from classroom. Prerequisite: MECH 200. **4 credits**

MECH 420 Fluid Power 2 — Provides an understanding of hydraulic control systems and an introduction to fluidic control systems and control logic. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of a variety of hydraulic control systems. Sizing calculations for system components are also covered. Prerequisite: MECH 320. **4.5 credits**

MECH 432 Automatic Sprinkler Systems Design 1 — For persons involved in engineering design, supervision or inspection of commercial and industrial automatic sprinkler systems to gain an understanding of pipe schedule systems and water supply system analysis. The course examines the basics of wet and dry pipe systems; NFPA Standard #13; system components and applications; basic hydraulics of piping systems; water supply system analysis and tests with various examples; quick opening devices. Classroom lectures may be augmented by a Saturday field trip to take water flow tests. Students require an electronic calculator with XY function. Prerequisite: MECH 222 or MECH 303. **3 credits**

MECH 433 Automatic Sprinkler Systems Design 2 — Advanced detailed instruction for persons involved in fire service, engineering design, supervision or inspection of automatic sprinkler systems in commercial and industrial buildings. The course examines deluge systems; pre-action systems; combined dry pipe and pre-action systems; water spray systems; special systems; hydraulics of sprinkler systems including tree, looped and gridded systems; computerized calculations; economical design considerations; water tanks; fire pumps, booster pumps, jockey pumps; maintenance of systems. Prerequisite: MECH 432. **4.5 credits**

MECH 444 Metrology — Includes measurement of surface texture and flatness, optical and electrical comparators, metrology of screw threads, precision measuring instruments, fundamentals of inspection, mass production gauging. Prerequisite: MECH 240. **4.5 credits**

MECH 445 Computer Numerical Control Laboratory — Computer Numerical Control programming and verification on a 3-axes CNC mill and other CNC machines. **4.5 credits**

MECH 460 Engineering Economy — Emphasizes the importance of making sound economic decisions when faced with alternative methods of solving technical problems. The course material provides the basic skills and concepts required to analyze comparative costs and to understand the time value of money (interest), inflation, depreciation, running costs, salvage value and tax considerations. **2 credits**

MECH 466 Fluid Systems — Dimensionless parameters. Pump and piping characteristics, operation and maintenance. Cavitation. Air movement and supply, fan performance and characteristics, duct sizing and networks. Prerequisite: MECH 303. **2.5 credits**

MSYS 103 Plumbing — Topics include codes, basic engineering principles and graphic presentations related to plumbing systems design, load calculations, piping methods, sizing of system components for storm and sanitary drainage and water distribution. Some drafting skill will be required. Prerequisite: MECH 100 or MECH 140. **4 credits**

MSYS 212 Heating and Ventilation 1 — Covers the principles involved with heat loss in buildings and practises of heating and involved with heat loss in buildings and practises of heating and ventilation, encompassing a study of system components and design procedures. These will then be applied to the preparation of heat loss calculations and working drawings for a heating-ventilation system. Prerequisite: MECH 107. **6 credits**

MSYS 301 Heating and Ventilation 2 — Principles and practices of heating and ventilation for residential, commercial and institutional buildings. Instructional material encompasses fuel oil, gas and solar heat energy sources; fuel handling heating boilers; solar collectors; building heat loss evaluation; building ventilation, load evaluation; space air distribution; ducted air distributions; warm air heating. Prerequisite: MSYS 212. **3 credits**

MSYS 400 Air Conditioning Systems — Part 3 of a three-part course on heating, ventilation and air conditioning. Properties of air extending use of psychrometric chart to air conditioning comfort criteria and examination of air conditioning processes; refrigeration for air conditioning, encompassing evaporator, compressor, condensor and expansion valve performance characteristics and selection; air conditioning systems, encompassing representative unitary, constant volume and variable volume systems. Prerequisite: MECH 301. **10.5 credits**

NAVL 150 Naval Architecture Introduction — Introduces procedures in the major stages of the design and construction of a ship, and the working environment in the industry. Students wishing to continue to NAVL 152 should take MATH 101, MECH 100, MATH 102 and MECH 200 before NAVL 150, but it is not an essential prerequisite. **3 credits**

NAVL 152 Naval Architecture Fundamentals — Includes calculation for a vessel's displacement, hydrostatic particulars, transverse and longitudinal stability, calculation of weights and strength of connections, properties, use and procedures for drawing hydrostatic and launching curves. Prerequisite: NAVL 150, MECH 104, MATH 101, MECH 100, MATH 102, MECH 200, MECH 208. MECH 208 may be taken concurrently. **6 credits**

NAVL 253 Applied Naval Architecture — Development of design requirements for typical small ships and boats relative to weight, space, equipment, general arrangements and functional details. Forms of hull structure, structural components and details, including methods of construction. Introduction to rules and regulations for structure, equipment and operation. Note: A large portion of class will be devoted to sketching and conceptual drawing. Prerequisite: NAVL 152 and MECH 206. MECH 206 may be taken concurrently. **9 credits**

NAVL 300 Ship Systems — New course under development, description not available at time of printing. Prerequisite: NAVL 152. **3 credits**

OPMT 103 Quality Control Methods 1 — An introductory course in statistical process control. Descriptive statistics, types of frequency distributions, and basic probability calculations provide the foundation for sampling and control chart theory. Pre-production process capability studies. Process control during production. Construction, use and interpretation of control charts for variables and attributes, including X-BAR, R, S, P, NP, C, U, median, cusum and pre-control charts. Microcomputer applications. Prerequisite: Algebra 11. **3 credits**

OPMT 182 Operations Management — Students will be introduced to problem situations at the management level of a production organization. Each topic is introduced by lecture and continued by lab work involving practice in various solution techniques. Students are expected to produce management reports for each assignment. The topics covered are: business forecasting at the product level; inventory control including EOQ, ELS and an introduction to MRP; project control using CPM and PERT; quantitative methods including linear programming and waiting line techniques; introduction to business accounting and finance, including production cost accounting. All students are required to work with packaged computer programs. Prerequisite: TCOM 210 or COMM 183. **6 credits**

OPMT 203 Quality Control Methods 2 — Continuation of OPMT 103. It deals with statistical methods in acceptance sampling. Review of probability and statistics with emphasis on attributes and variables. Basic sampling plan concepts and OC curves. The economics of sampling. Attribute sampling, variable sampling. Dodge-romig plans. Single, double, multiple and sequential sampling. The use of ANSI Z1.4 (MIL-STD-105) and ANSI Z1.9 (MIL-STD-414) are covered. OC curves on microcomputer. Prerequisite: OPMT 103. **3 credits**

OPMT 411 Production Engineering Management — Presents aspects of management and the industrial engineering functions of a manufacturing plant. Intended for technologists, engineers, designers, draftpersons and technical sales people who wish to have a clearer understanding of the range of problems and decisions involved in a manufacturing organization. Topics include management and plant organization, plant location and layout, production control, maintenance management, production planning, job design and time standards. TCOM 210 or COMM 183. **6 credits**

PHYS 133 Physics 2 Part 1 — Physics 1 and 2 satisfy the knowledge required in various engineering and related technologies. Topics include sound, light, basic electricity and magnetism, basic semiconductor theory, atomic and nuclear phenomena. Mathematical treatment requires algebra and trigonometry and possibly some calculus. Prerequisite: PHYS 132 or MECH 208. **3 credits**

PHYS 134 Physics 2 Part 2 — See PHYS 133. Prerequisite: PHYS 133. **3 credits**

ROBT 470 CNC and Robotic Languages — Introduces the student to current CNC and Robot languages such as APT and VAL. Investigates the integrated manufacturing centre. Prerequisite: CDCM 311, MECH 130 or CDCM 303. **4 credits**

Plastics Technology

D.F. Wilson, B.Sc, M.Sc., Ph.D., Program Head
Telephone: 432-8350
J.E. Pretzlaff, Dipl.T.
Telephone: 432-8366

The two year full-time diploma program commenced September 1987. The program is designed to provide practical and theoretical training in production processes used in the manufacture of plastic products for a variety of applications: packaging, recreational, construction, electronics communications, domestic and automotive, to name but a few.

For more information on the plastics technology please refer to the full-time calendar or call our staff to discuss the possibility of offering courses through part-time studies or as industry services courses.

Robotics and Automation Technology

D. Lewis, P.Eng., Program Head
Telephone: 434-5734, local 5485
Program Advisor
Telephone: 432-8467

The Robotics and Automation Technology provides students with the knowledge and skills necessary for employment in the area of Computer Aided Manufacturing utilizing computer controlled machinery, robotics and flexible automation.

The graduate will be skilled in the specification, evaluation, selection and layout of automated equipment, tooling - gripper and fixture design, the design and application of modern computer controls to existing equipment, interfacing and communication between automated machinery within an integrated environment, programming of computer controlled systems using both high level language and low level assembly language code and electrical/electronic and mechanical troubleshooting and maintenance of these systems.

Employment may be found at the technical or managerial level in the areas of component and system design and specification, technical sales, installation and commissioning of equipment, maintenance or research and testing.

The program of study leading to the award of the Certificate of Technology, or the Intermediate Certificate in Electro-Mechanical Technology, and the Diploma in Robotics and Automation Technology will consist of electronic, mechanical and specialized robotics and automation courses as well as mandatory core courses and other technology courses to the required total credits. Students who already hold Certificates or Diplomas in Electronics Technology or Mechanical Technology may be able to enter directly into the Diploma program after taking the necessary prerequisite courses. All programs must be submitted to the program advisor for approval by the Technology department.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN ELECTRO-MECHANICS

		Credit
ELEX 100 *	Circuit Analysis 1 (DC Circuits)	7.0
ELEX 102	Digital Techniques 1	6.0
ELEX 200 *	Circuit Analysis 2 (AC Circuits)	6.0
ELEX 203	Electronic Circuits 1	8.0
MATH 143	Basic Technical Mathematics for Electronics	8.0
MECH 106	Manufacturing Processes 1	4.0
MECH 240	Manufacturing Processes 2	6.0
MECH 320	Fluid Power 1	3.0
PHYS 106	Physics 1 for Electronics Technology	7.0
TCOM 114	Technical Writing for Electronics	4.0

*ELEC 208 is an accelerated combined course (ELEX 100 and 200) for those with previous training. This course proceeds at a very rapid pace. Successful students usually have a strong mathematics background. After approximately four weeks a written examination will determine those who will be permitted to continue with ELEC 208, and those who will be required to transfer to ELEX 100.

This course must be taken concurrently with MATH 113. Please read course descriptions for further information.

CERTIFICATE OF TECHNOLOGY IN ELECTRO-MECHANICS

		Credit
ELEX 201	PASCAL Programming	5.0
ELEX 202	Digital Techniques 2	7.0
ELEX 341	Data Acquisition and Signal Conditioning	7.0
MATH 243	Calculus for Electronics	7.0
MECH 420	Fluid Power 2	4.5
PHYS 206	Physics for Electronics Technology	5.0
ROBT 301	Robot Applications	8.0
ROBT 302	Automation Equipment	6.0

DIPLOMA OF TECHNOLOGY IN ROBOTICS AND AUTOMATION

		Credit
ELEX 460	Feedback Systems	7.0
MATH 343	Transform Calculus for Electronics	6.0
OPMT 183	Industrial Engineering for Robotics	4.0
ROBT 303	Microprocessors: Programming and Interfacing	7.0
ROBT 401	Robot Sensors	7.0
ROBT 402	Computer Integrated Manufacturing	7.0
ROBT 403	Project	6.0
TCOM 214	Technical Writing for Electronics	4.0

Course Descriptions

ELEC 208 Circuit Analysis AC/DC — Applicants are required to obtain authorization from the department before enrolling in this course. This course enables persons with a strong background or education in the electrical field to cover and or/review those topics necessary to take the more advanced courses in the Electronics program. Students study the basics of how single phase AC and DC circuits work, and how to analyze and design them for particular situations. This course is not intended for those without previous training in electrical theory or advanced math. Prerequisite: Math higher than Algebra 12, Physics 11 and Chemistry 11; entry to this course by written permission of technology only.
11 credits

ELEX 100 Circuit Analysis 1 — Teaches the principles and methods of analysis related to DC circuits. Topics include SI units and terminology, voltage, current, work, energy, power and resistance. Methods of analysis include mesh, superposition, nodal, Thevenin and Norton. Transients in RC and RL circuits are analyzed. Labs are synchronized with lectures so that theory is studied and confirmed by application. Prerequisite: Algebra 12, Physics 11.
7 credits

ELEX 102 Digital Techniques — Begins with a description of the fundamental theory of the decimal and binary number systems. Followed by an introduction to the binary (two states or levels) concept and description of binary variables as they relate to mechanical switches. Various digital logic circuits are discussed and their truth tables and Boolean output equations are gener-

ated. Various logic sources are defined and interfaced to combinational logic circuits comprising electronic logic gates. A TTL data book will be utilized to facilitate combinational logic circuit design. Boolean identities and Karnaugh mapping will be used to minimize algebraic expressions. Combinational digital logic will be designed and constructed implementing NAND and NOR GATES using their proper Demorgan's equivalent logic symbols (Duality of Gates). Encoders and decoders will be introduced. Upon successful completion of this course, students will be able to use the standard logic symbols correctly and apply proper gating techniques to the analysis and construction of basic logic circuits from word problems, or in the laboratory environment. **6 credits**

ELEX 200 Circuit Analysis 2 — Introduces the behavior of electrical circuits and networks when driven by a single-phase alternating current (AC) source in preparation for courses in electronics and power systems. The course includes the sine wave, average and effective values, power and power factor; resistance, capacitance and inductance as elements in single-phase AC circuits; phaser diagrams, impedance, admittance, voltage, current and power diagrams; analysis of AC circuits with complex algebra; resonance and resonant circuits, high and low pass filters; the application of circuits laws and theorems to single-phase AC circuits, coupled circuits. Circuit theory is verified using multimeters, sine wave generators and dual trace oscilloscopes. Prerequisite: ELEX 100, MATH 143. **6 credits**

ELEX 201 PASCAL Programming — An introductory course on microcomputer use, DOS operating system, programming languages, compilers and interpreters. The IBM personal computer is used throughout this course for interactive student training. The main part of the course covers PASCAL programs for electronics engineering applications. Students will also learn to document, debug, and utilize available software libraries. Prerequisite: ELEX 100, 200 or ELEC 208 (may be taken concurrently with ELEX 200 or ELEC 208). **5 credits**

ELEX 202 Digital Techniques 2 — Studies the utilization of logic circuits. TTL family specifications including noise margins, loading and propagation delays. Interfacing of various digital circuits, encoding and decoding of numbering systems and digital arithmetic, sequential logic, flip flops, counters and shift registers. Also included are frequency counters, digital multiplexing and memories. Prerequisite: ELEX 102 **7 credits**

ELEX 203 Electronic Circuits 1 — Explains how electronic circuits work: how to analyze, design, modify and combine them to perform complex functions. Topics include interpretation of bipolar and field-effect transistor characteristic curves; voltage and current amplifying circuits; the transistor as a switch; loadline analysis; choice of Q-point: bias circuits; equivalent circuits; frequency response, feedback, oscillation response; oscillator circuits; power amplifiers of various types; heat sink calculations; DC power supplies and characteristics and application of switching devices. Prerequisite: MATH 143, PHYS 106, ELEX 200 (ELEX 200 may be taken concurently.) **8 credits**

ELEX 341 Electronics for Interfacing and Signal Conditioning — Examines the application and design of precision analog circuits to interface and signal conditioning systems. Topics include the specification, design and evaluation of amplifier systems commonly used in transducer interfacing applications, high accuracy and stability signal conditioning design techniques and analog signal transmission and multiplexing systems with emphasis on the 2 wire current loop. A strong practical approach is ensured by relevant lab exercises and projects. Prerequisite: ELEX 203. **7 credits**

ELEX 460 Feedback Systems — An introduction to linear feedback theory and practice as applied to servomechanisms - motor position and speed control. Block diagram transfer functions are developed for steady state systems. Bode and Root-Locus frequency analysis are used to evaluate control system performance. Prerequisite: MATH 343, ELEX 341, ROBT 301, 302 and 303. **7 credits**

MATH 113 Mathematics for Electronics Technology — An accelerated course based on the material covered in MATH 143. Open only to students currently registered in ELEC 208 and MATH 143 by invitation only. **6 credits**

MATH 143 Basic Technical Mathematics for Electronics — Common and natural logarithms, logarithmic/semilogarithmic graphs, decibels, exponential growth and decay. Systems of linear equations, determinants, application to electrical networks. Trigonometric functions, identities, solution of triangles, graphing and addition of sinusoidal functions. Complex numbers, rectangular/polar transformations, phasor representation of sinusoidal waveforms. The format of this course is currently being changed. Prerequisite: Algebra 12. **8 credits**

Math 243 Calculus for Electronics — The derivative, differentiation rules, applied maxima/minima, and implicit differentiation with applications to electrical technology. Antidifferentiation, the indefinite integral and the definite integral including area, mean value and RMS value. Differentiation and integration of trigonometric, logarithmic and exponential functions. Prerequisite: MATH 143. This course will be offered in 89/90 and 91/92; it will not be offered in 88/89 or 90/91. The format is currently being changed. Please call 402-8458 for information on changes to course length, credits and topics. **7 credits**

MATH 343 Transform Calculus for Electronics — First and second order differential equations, The Laplace Transform as an integral function. Transform pairs for functions and operations, inverse transforms from tables, techniques of partial fraction expansion for inverse transformation. Poles, zeroes, s-plot, s-domain circuit diagram and applications. Transients in multi-mesh circuits, transfer functions and frequency responses to sinusoidal inputs. Fourier series, trigonometric Fourier coefficients and frequency spectrum. Prerequisite: MATH 243. This course will be offered in 88/89 and 90/91; it will not be offered in 89/90 or 91/92. The format is currently being changed. Please call 402-8458 for information on changes to course length, credits and topics. **6 credits**

MECH 106 Manufacturing Processes 1 — A basic orientation course which provides the student with practice in metal removal, and a study of related theory. **4 credits**

MECH 240 Manufacturing Processes 2 — Machine tool operations, production processing and economics, evaluation of production features, maintenance. Metal joining processes and equipment, production costs and design applications. Prerequisite: MECH 106. **6 credits**

MECH 320 Fluid Power 1 — Provides an understanding of pneumatic control systems. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of simple and sequential control systems. Sizing calculations for system components are covered. **3 credits**

MECH 420 Fluid Power 2 — Provides an understanding of hydraulic control systems and an introduction to fluidic control systems and control logic. Fluid power components, their symbols, function and construction are examined and used in the design, construction and testing of a variety of hydraulic control systems. Sizing calculations for system components are also covered. Prerequisite: MECH 320. **4.5 credits**

OPMT 183 Industrial Engineering for Robotics — Surveys the general background to operations management in terms of planning and organizing manufacturing operations. Topics include facility location and layout, methods improvement and production/inventory management. **4 credits**

PHYS 106 Physics for Electronics Technology — A general level course about physical quantities, their properties, relationships, how they affect each other and their connecting principles. Motion, force, mechanical energy and power are studied concerning translational and rotational motion followed by basic electricity, atomic physics and the band theory of solids and its application to semiconductor devices. The lab program emphasizes measurements, data analysis and experimental techniques while confirming and expanding the lecture concepts. Math treatment requires algebra, trigonometry and vector analysis. Prerequisite: Algebra 12, Physics 11. **7 credits**

PHYS 206 Physics for Electronics Technology — Continued from PHYS 106, this general level course covers magnetism and magnetic materials, fluids, thermal enegy, vibrations and waves, optics and electromagnetic radiation, and modern physics. Application and principles in the electrical engineering field are stressed. The lab program emphasizes measurements, data analysis and experimental techniques while confirming and extending the lecture concepts. Mechanical Technology students can take this course for PHYS 216 equivalency with their prerequisite being MECH 217. Math treatment requires algebra, trigonometry and some calculus. Prerequisite: PHYS 106. This course will be offered in 88/89 and 90/91. It may not be offered in 89/90 or 91/92. **5 credits**

ROBT 301 Robot Applications — Discusses various Robot configurations, the coordinate systems in which they operate and the kinematics of robot motion. Investigates specifications such as accuracy, repeatability and load capability and their importance in various applications. Prerequisite: MECH 240, 320, ELEX 201, PHYS 208 or 206, MATH 234 or 243. **8 credits**

ROBT 302 Automation Equipment — Covers the basic principles of generators and the construction, speed-torque characteristics, braking conditions and speed control of permanent magnet DC motors. The course will also cover the operation and control of brushless DC motors and stepper motors.Prerequisite: ELEX 200, 202, 203, and PHYS 208 or 206, MATH 234 or 243. **6 credits**

ROBT 303 Microprocessors and Interfacing — Investigates the software and hardware involved in the real-time control of a microprocessor based system. Topics include microprocessor architecture, assembly language programming, input/output operations, interrupt handling and interfacing techniques used between a computer and an automated controller. Troubleshooting techniques used in fault analysis are taught.Prerequisite: ELEX 201, ELEX 202, 203,341. **7 credits**

ROBT 401 Robot Sensors — Investigates various methods of interfacing real world systems to a digital computer through the use of analog-to-digital and digital- to-analog converters. Machine vision and object recognition, tactile force sensors and range finding and navigation techniques using proximity sensors are studied. Prerequisite: ROBT 303 and ELEX 302, ELEX 341. **7 credits**

ROBT 402 Computer Integrated Manufacturing — Teaches the use of a microcomputer based Computer Aided Design system. Programming the operation of Computer Numerical Control machine tools using manual and computer assisted methods is also covered in depth and the integration of Computer Aided Design and Manufacturing is investigated. Prerequisite: ROBT 301. **7 credits**

ROBT 403 Project — A graduation project researched and presented by the student on some aspect of automated technology. Students will give written and oral presentations on their proposed and completed designs. Prerequisite: Concurrent completion of all courses leading towards a Robotics and Automation Diploma. **6 credits**

ROBT 900 Introduction to Industrial Robotics — This non-credit introductory course will investigate various types of industrial robots and the coordinate systems in which they operate. Control of robot motion required for specific applications will be evaluated. Specifications such as accuracy, speed, number of axes and load capacity will be studied. Hands-on instruction will be given on BCIT's robotic systems. This course runs on Saturday mornings for 5 weeks. Telephone 434-5734 local 5485 for the dates of the next offering. **non credit**

TCOM 114 Technical Writing for Electronics — An introduction to basic technical writing skills. Students develop competence in planning, organizing and presenting information using graphics, writing technical descriptions, instruction and routine technical correspondence. Students also prepare a resume and application for Co-op. Prerequisite: B.C. English 12 "C" standing. **4 credits**

TCOM 214 Technical Writing for Electronics — A continuation of TCOM 114, this course develops competence in writing short reports and system documentation, and delivering technical briefings. Prerequisite: TCOM 114. **4 credits**

PROCESS TECHNOLOGIES

Ron Hyde, B.S.A., M.Sc., P.Ag., Associate Dean
Telephone: 432-8887

Biological Sciences Technology
Chemical Sciences Technology
- **Nondestructive Testing**
- **Metallurgy**
- **Paint Technician**

Gardening-Horticulture
Landscape Technology
Mining
Petroleum
Pulp and Paper Technology Summer Institute
Wood Products Manufacturing

Biological Sciences Technology

Werner Hooge, B.S.A., P. Ag., Program Co-ordinator
Telephone: 432-8269
Program Advisor
Telephone: 432-8467

Course Descriptions

BISC 152 Food Analysis Techniques — Offers students practical laboratory work with modern instrumentation in a well equipped laboratory. Selected analyses will be offered to cover a range of techniques. Students are encouraged to bring their own samples. The laboratory work will be supported by lecture material. **3 credits**

BISC 901 Basic Food Processing — An introduction to the processing of foods by canning, freezing, pasteurizing, ferment-

ing, concentrating and dehydrating. Importance of sanitation in food processing operations. Testing of food containers. Examination of processed food products. **non credit**

BISC 903 Thermal Processing and Container Evaluation — Designed to provide certification for supervisors of heat processing and container evaluation operations in food canning plants. Topics include: the microbiology of canning, food container handling, food plant sanitation, records for product protection, principles of heat processing, heat processing systems, container closure evaluation for metal and glass containers. **non credit**

BISC 904 Sanitation Workshop for Food Processing Industry — The major emphasis of the program will be on the basic fundamentals of food plant sanitation. The workshop will offer a broad range of information incorporating specific technology. General topics are: the microbiology of sanitation; insect and rodent control, cleaning and sanitizing, plant storage control, handling toxic materials, waste material handling, plant inspections. Open to persons employed and associated with the food processing industry. There are no special educational requirements for admission. **non credit**

BISC 905 Technology of Baking — Surveys the technology that forms the basis of the commercial bakery industry. Emphasis is on major industry products and processes. Topics include: wheat selection, flour specifications, flour quality testing using the Farinograph, other ingredients of baking, commercial bread making procedures and other baking processes. **non credit**

Chemical Sciences Technology

Bill Bogyo, B.C.L. Ass., Senior Instructor, Program Co-ordinator
Telephone: 434-5734, local 5756
Bob Pike, Program Head, Quality Assurance-Nondestructive Testing
Telephone: 434-5734, local 5769
Program Advisor
Telephone: 432-8467

Intermediate Certificate Programs in:
Nondestructive Testing
Metallurgy
Paint Technician

The programs leading to the award of the Intermediate Certificate of Technology in the above areas of Chemical Sciences Technology, will consist of chemical sciences courses plus mandatory core courses and other technology courses to the required total credits. All programs must be submitted to the program advisor for approval by the Technology Department.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN NONDESTRUCTIVE TESTING

Mandatory Courses

		Credit
CHSC 156	Metallurgy 1	6.0
CHSC 169	NDT Radiography Level 1	3.0
CHSC 170	NDT Ultrasonics Level 1	3.0
CHSC 171	NDT Eddy Current	3.0
CHSC 172	NDT Magnetic Particle and Liquid Penetrant	3.0
CHSC 173	NDT Strain Gauge and Acoustic Emission	3.0
CIVL 250	Stress Analysis 1 (Strength of Materials)	3.0
CIVL 350	Stress Analysis 2 (Strength of Materials)	3.0
COMM 160	Introduction to Business and Technical Communication	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MECH 304	Manufacturing Processes 3	4.0

PLUS at least FOUR NDT courses selected from list below:

Optional, Elective and Advanced Courses

CHSC 269	NDT Radiography Level 2	3.0
CHSC 270	NDT Ultrasonics Level 2	3.0
CHSC 304	Physical Metallurgy	6.0
CHSC 404 *	Physical Metallurgy	9.0
COMM 175	Letters and Memos	3.0
COMM 183	Technical Reports	3.0
MATH 106	Probability and Statistics 1	6.0
MECH 140	Drafting Fundamentals	3.0
OPMT 103	Quality Control Methods 1	3.0
OPMT 203	Quality Control Methods 2	3.0

* This course is available through part-time day study only.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN PAINT TECHNOLOGY

Mandatory Courses

		Credit
CHEM 101 *	Applied Chemical Principles 1	6.0
CHEM 201 •	Applied Chemical Principles 2	9.0
CHEM 317	Gas and Liquid Chromatography	3.0
CHSC 163	Paint Technology	4.5
CHSC 164	Paint Technology: Latex Paints	1.5
CHSC 165	Paint Technology: Modern Coating Resins	1.5
COMM 175	Letters and Memos	3.0
COMM 183	Technical Reports	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0

Elective Courses

CHEM 204 *	Chemical Laboratory Techniques	4.5
CHEM 309 •	Organic Chemistry	6.0
CHEM 314 •	Analytical Chemistry 1	6.0
CHEM 409 *	Organic Chemistry 2	9.0
CHEM 414 *	Analytical Chemistry 2	9.0
CHSC 246 *	Industrial Chemical Processes	5.0
MATH 106	Probability and Statistics 1	6.0

• These courses are available through part-time day study only.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN METALLURGY

Mandatory Courses

		Credit
CHSC 156	Metallurgy	6.0
CHSC 304	Physical Metallurgy	6.0
COMM 175	Letters and Memos OR	
COMM 183	Technical Reports	3.0
MATH 101	Technical Mathematics 1: Trigonometry	3.0
MATH 102	Technical Mathematics 2: Logarithms and Analytic Geometry	3.0
PHYS 131	Physics 1 Part 1	3.0
PHYS 132	Physics 1 Part 2	3.0

Optional-Elective Courses

CHSC 260	Mineral Analysis	12.0
CHSC 314	Mineral Processing	3.5
CHSC 404 *	Physical Metallurgy	9.0

		Credit
CHSC 414	Mineral Processing	5.0
CIVL 101	Statics	6.0
CIVL 250	Stress Analysis 1 (Strength of Materials)	3.0
CIVL 350	Stress Analysis 2 (Strength of Materials)	3.0
COMM 160	Introduction to Business and Technical Communication	3.0
MECH 140	Drafting Fundamentals	3.0

Course Descriptions

CHEM 101 Applied Chemical Principles 1 — Provides the necessary background for chemical calculations and analysis. Included are stoichiometry, atomic structure, bonding, solution preparation and acid base and oxidation-reduction reactions and titrations. Study of chemical equilibrium leads to a good working knowledge of pH, buffer solutions, solubility product, selective precipitation and industrial processes involving equilibria. Lab work consists of qualitative and quantitative analysis using good lab technique. **6 credits**

CHEM 201 Applied Chemical Principles 2 — A continuation of CHEM 101 which includes theory of gravimetric and volumetric analysis, and qualitative analysis of cations and anions. Electrochemistry includes cells, electroplating and corrosion. Study of physical chemistry provides theory of solids, liquids and gases leading to fractional distillation and colligative properties. The Periodic Table is used to correlate many properties of elements and compounds. Names and properties of some organic compounds are taught and lab work covers qualitative and quantitative analysis and physio-chemical separations. Throughout CHEM 101-201 attention is given to industrial and everyday applications. **9 credits**

CHEM 204 Chemical Laboratory Techniques — Teaches basic techniques in sampling, weighing, moisture determination, ashing, extractions, filtration gravimetric methods and volumetric methods. Instrumental analysis and separation methods will be described, demonstrated and practiced. **4.5 credits**

CHEM 309 Organic Chemistry — A general course covering properties, preparations and reactions of all major classes of organic compounds — aliphatic and aromatic hydrocarbons, halides, alcohols, ethers, carboxylic acids and derivatives of carboxylic acids, aldehydes, ketones, amines, amino acids, carbohydrates, heterocyclics, dyes, and polymers. Lab work emphasizes organic techniques of qualitative chemical analysis and instrumental methods, infra-red, ultra-violet and gas chromatography. **6 credits**

CHEM 314 Analytical Chemistry 1- Conventional inorganic methods of analysis for determining the common metals in ores and alloys. Basic methods of fire assaying for gold and silver are also covered. **6 credits**

CHEM 317 Gas and Liquid Chromatography — Introduces students to the uses of gas chromatography (GC) and high performance liquid chromatography (HPLC) in solving organic analysis problems. Applications of GC and HPLC are found in energy, chemical, food and forest industries as well as laboratories concerned with environmental and clinical work. Topics include separation theory, instrument operation and trouble shooting, quantitative and qualitative analysis, columns, detector application and sample preparation. **3 credits**

CHEM 409 Organic Chemistry 2 — A continuation of CHEM 309. **9 credits**

CHEM 414 Analytical Chemistry 2 — Advanced analytical techniques using various instruments such as the polarograph, spectrophotometer, coloriometer, gas chromatograph, spectrograph, X-ray scintillometer and X-ray diffractiometer. **9 credits**

CHSC 156 Metallurgy — Includes casting and forming of metals, heat treatment, physical testing, nondestructive testing and metallurgy of welding. Laboratory work involving metallography, heat treatment and corrosion constitutes approximately half of the course. **6 credits**

CHSC 163 Paint Technology — An introductory course for those actively engaged in paint and coatings manufacture (both technical and production sides), raw material suppliers, architects, professional decorators and paint salesmen. Students study the raw materials used in the coating industry, the methods of coatings manufacture, application methods and formulating techniques. **4.5 credits**

CHSC 164 Paint Technology: Latex Paints — Complements CHSC 163 Paint Technology. Students study latex paints including aspects of polymer emulsion manufacture and the formulation and manufacture of latex paints. Prerequisite: CHSC 163. **1.5 credits**

CHSC 165 Paint Technology: Modern Coating Resins — Complements CHSC 163 Paint Technology. Students study the production and end use of contemporary surface coating resins. Prerequisite: CHSC 163. **1.5 credits**

CHSC 166 Glassblowing — Recommended for persons working in a chemical laboratory setting to develop skills in the natural gas and oxygen flame working of glass tubing and rods. Topics include identification of glasses; preparation and cutting of glass; procedure for working with tubing; pulling points, seals, straight tubes, round and flat bottom tubes; sealing, bands, blowing bulbs, ring seals; side arms, small condensers, flask joints, columns and coil wings. Students learn to perform minor repairs to laboratory glassware. **3 credits**

CHSC 169 NDT Radiography Level 1 — Covers the general principles of radiography: nature of penetrating radiation, the interaction between penetrating radiation and matter, radiation sources, detection and measurement of radiation, radiation safety and darkroom procedures. Students learn the proper selection of a radiation source for a given application, film type, screens, etc., and should be able to perform radiographic examinations according to prescribed techniques. The course meets the requirements for classroom training as stipulated in CGSB Standard 48-GP-4M, condition (b). **3 credits**

CHSC 170 NDT Ultrasonics Level 1 — Combines theory with practice, using a variety of ultrasonic testing equipment and test samples to cover generation of ultrasound. Instrumentation, frequency, velocity, wavelength, attenuation, calibration, reference standards, longitudinal, transverse and surface waves, reflection, Snell's Law, sensitivity and resolution. Meets the requirements of CGSB Standard 48-GP-7M, condition (b) for classroom training. **3 credits**

CHSC 171 NDT Eddy Current — Covers basic concepts of induced current, characteristics of induced eddy current, factors affecting conductivity, permeability and hysteresis, coil characteristics, impedance method-balanced bridge, signal to noise ratio, readout mechanisms, phase analysis, modulation analysis, methods and applications of eddy current testing, relationship of indications to discontinuities, advantages and limitations of the method, probe arrangement, design and manufacture. Meets classroom training requirements as stipulated in CGSB Standard 48-CP-13M for levels 1 and 2. **3 credits**

CHSC 172 NDT Magnetic Particle and Liquid Penetrant — Covers theory of magnetism and magnetic properties of materi-

als; comparison with other NDT methods; current characteristics; direct and indirect induction; residual and continuous methods; black light — principles and requirements; dry vs. wet method; indicating the mediums; material controls and calibration; discontinuities — their causes and detectability; demagnetization; inspection, interpretation and evaluation of indications. Meets CGSB Standard 48-GP-8M and 9M condition (b) levels 1 and 2. **3 credits**

CHSC 173 NDT Strain Gauge and Acoustic Emission — Includes reviews of the theory and applications of electrical resistance strain gauges and acoustic emission techniques. **3 credits**

CHSC 246 Industrial Chemical Processes — A description of the chemical processes involved in major industrial chemical plants in B.C. Emphasis is placed on chemical operations associated with the pulp and paper industry including chemical pulping and water treatment. Lab sessions involve the testing and control procedures utilized in industrial applications. **5 credits**

CHSC 254 Pollution Control Equipment and Techniques — Familiarizes the student with engineering methods currently used for the control-treatment of major air and water pollutants. Methods include electrostatic precipitators, scrubbers, cyclone collectors, fabric filters, control of motor vehicle emissions, stack sampling, cooling towers, industrial and municipal wastewater treatment processes, oil spill recovery techniques, solid waste disposal methods and treatment of radioactive wastes. **3 credits**

CHSC 260 Mineral Analysis — Deals specifically with chemical methods of ore analysis. Presents basics of analytical chemistry ore assaying and an opportunity to develop laboratory skills. The course covers the general methods of ore analysis, principles and practice of fire assaying for gold and silver and gravimetric and volumetric analysis. **12 credits**

CHSC 267 Air Pollution: Chemistry and Sampling Techniques — Examines the chemistry of the major air pollutants and their interactions in the atmosphere — the oxides of sulphur and nitrogen, carbon monoxide, carbon dioxide, hydrocarbons, particulates (including heavy metals) chlorocarbons and fluorocarbons; the effects of air pollutants on human health and on the environment; the collection and analysis of air pollutant samples by various methods — infra-red, gas chromatography and atomic absorption. **3 credits**

CHSC 268 Water Pollution: Chemistry and Sampling Techniques — Discusses the processes that take place in water systems when pollutants are present, and the various techniques used for detection and control of these pollutants. The course examines the chemistry and microbiology of the major water pollutants; the major sources of pollutants, their interactions in the environment and methods of control-treatment; laboratory analysis of water samples. **4.5 credits**

CHSC 269 NDT Radiography Level 2 — Meets the requirements of CGSB Standard 48-GP-4M, condition (b) for classroom training. The course includes a review of radiation theory, physical principles, radiation sources, detection and safety. Topics include the radiographic process, miscellaneous applications, test result interpretation, material considerations, codes standards, specifications and procedures. Prerequisite: CHSC 169 or be a certified level 1 radiographer. **3 credits**

CHSC 270 NDT Ultrasonics Level 2 — Meets the requirements of CGSB Standard 48-GP-7M, condition (b) for classroom training. The course includes a review of the theory of ultrasonic testing and its practical applications. Emphasis will be on the operation of special equipment, applications requiring specific testing procedures and the consideration of variables affecting test results. Prerequisite: CHSC 170 or be a certified level 1 operator. **4.5 credits**

CHSC 274 Pulp and Paper Manufacture — Presents a detailed background to the pulp and paper industry of British Columbia for those presently employed in manufacturing, service functions and allied industries. The course discusses the processes employed and the mechanical equipment utilized in the manufacture of pulp and paper. It examines wood structure and chemistry, water treatment, mechanical and chemical pulp manufacture, pulp bleaching, kraft recovery systems, chemical preparation and handling, pollution abatement, paper and paperboard manufacture, future developments. Guest lecturers discuss specific areas. **7.5 credits**

CHSC 304 Physical Metallurgy — Develops the subject areas covered in CHSC 156 Metallurgy. Iron and steel-making processes, solidification of metals and alloys, operations, casting methods and defects, foundry technology, metal forming, review of phase diagrams for binary alloy systems, isothermal transformations in steels, heat-treating techniques, non-ferrous metals and alloys, welding metallurgy and principles of nondestructive testing. Lectures and field trips to industrial plants are supplemented by lab sessions which emphasize physical testing of materials, metallography, service failure investigation and nondestructive testing. Prerequisite: CHSC 156. **6 credits**

CHSC 306 Precious Metal Analysis — This course develops the precious metal analyst's knowledge, expertise and attitude relating to his role in the mining and metallurgical industry; sampling and sample preparation procedures; chemical analysis of a wide variety of materials in the exploration, mining, metallurgical and fabrication industries. Topics include the structure of the industry, characteristics of various types of laboratory sampling and sample preparation procedures, analytical methods of precious metal analysis including silver, gold, platinum, etc. **non credit**

CHSC 314 Mineral Processing — Deals specifically with mineral processing as applied to the B.C. mining industry. Covers the essential operations of applied mineral processing ie: crushing, grinding, screening, gravity separation, cyclone classification; flotation, sedimentation, thickening, filtration. Emphasis on numerical solution of operating and design type problems. Course includes laboratory work. **3.5 credits**

CHSC 404 Physical Metallurgy — A continuation of CHSC 304. Prerequisite: CHSC 304. **9 credits**

CHSC 414 Mineral Processing — A continuation of CHSC 314. Prerequisite: CHSC 314. **5 credits**

CIVL 101 Statics — Vectors, force systems, graphical analysis, resultants, components, moments, equilibrium laws, force polygons, funicular polygons, frames and trusses, stress diagrams, Bowes' notation, flexible tension members, load shear and bending moment curves. Closely supervised problem sessions are used to provide the student with practice in common analytical and graphical solutions to problems of static load on statically determinate structures Prerequisite: MATH 101. **6 credits**

CIVL 250 Stress Analysis 1 (Strength of Materials) — Examines simple stresses, stress-strain relationships and elasticity, material properties, temperature stress, Poilson's ratio, safety factors, compound bars and columns, simple bolted and welded connections and flexural stress. Testing techniques in the lab are introduced along with strain gauges, extensometers and data evaluation. Prerequisite: CIVL 101. **3 credits**

CIVL 350 Stress Analysis 2 (Strength of Materials) — Topics include: shear stresses in beams, deflection and rotation, re-

strained and continuous beams, eccentric loading and combined stresses, Mohr's circle analysis and column theory. Testing in the materials lab will illustrate theoretical principles. Prerequisite: CIVL 250. **3 credits**

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communicating in business and industry. It offers practical techniques for planning, organizing, selecting and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures and summaries. Oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 175 Letters and Memos — Covers communications inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered. **3 credits**

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in writing problem-solving reports. The emphasis is on the communication skills needed to solve engineering problems and to describe methods and products. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphs and formal report format. Persuasive presentations are also included. **3 credits**

MATH 101 Technical Mathematics 1: Trigonometry — A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic and semilogarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 106 Probability and Statistics 1 — An introduction to statistical methods and their application to technological problems. This course includes the organization and graphical representation of data, frequency distributions, measures of central tendency and variation, probability theory, random variables, mathematical expectation, theoretical distributions, sampling, estimation, hypothesis testing, analysis of variance, and curve fitting (regression and correlation). Prerequisite: recent Algebra 12 or MATH 001. **6 credits**

MECH 140 Drafting Fundamentals — An introductory course for persons with little or no experience in graphics. Students are required to purchase drafting equipment and supplies on the first night of class. Students learn to produce and read simple drawings. Topics include scales, geometric constructions, basic orthographics, detail interpretation, line visibility, dimensioning, auxiliary views, true shape, inclined and skewed surfaces, sections, pictorials, working drawings and freehand sketches. **3 credits**

MECH 304 Manufacturing Processes 3 — A study of hot and cold fabrication processes, materials and machines, quantities-costs will be investigated. An introduction to CNC programming by both manual and punched tape inputs. **4 credits**

OPMT 103 Quality Control Methods 1 — An introductory course in statistical process control. Descriptive statistics, types of frequency distributions, and basic probability calculations are covered to provide foundation for sampling and control chart theory. Pre-production process capability studies. Process control during production. Construction, use and interpretation of control charts for variables and attributes, including X-BAR, R, S, P, NP, C, U, median, cusum and pre-control charts. Microcomputer applications. Prerequisite: Algebra 11. **3 credits**

OPMT 203 Quality Control Methods 2 — This course continues from OPMT 103 and deals with statistical methods in acceptance sampling. Review of probability and statistics with emphasis on attributes and variables. Basic sampling plan concepts and OC curves. The economics of sampling. Attribute sampling, variable sampling. Dodge-romig plans. Single, double, multiple and sequential sampling. The use of ANSI Z1.4 (MIL-STD-105) and ANSI Z1.9 (MIL-STD-414) are covered. OC curves on microcomputer. Prerequisite: OPMT 103. **3 credits**

PHYS 131 Physics 1 Part 1 — Topics include kinematics, statics, linear and rotational dynamics, properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable). **3 credits**

PHYS 132 Physics 1 Part 2 — Topics include properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12 (Physics 11 is desirable), and PHYS 131. **3 credits**

Nondestructive Testing

CHSC 900 Introduction to Nondestructive Testing (NDT) (18 hours) — A survey of the field of nondestructive testing. Introduces students to the different types of NDT: radiography, ultrasonics, magnetic particle and liquid penetrant. Certification criteria, employment opportunities and training requirements for those seeking careers in NDT are discussed. Prerequisite: Grade 12 math and science. **non credit**

GARDENING/HORTICULTURE

Werner Hooge, B.S.A., P.Ag., Program Coordinator
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Program Advisor
Telephone: 432-8467

Course Descriptions

HRTC 901 Professional Floristry Design (48 hours) — Detailed instruction introduces students to the floristry business and equips them with the necessary competence to operate as a professional. Design theory, color principles, product knowledge and availability, plant care, efficient use of materials, costing and pricing formulas, in-store sales and wire service are taught. Flowers will be supplied in this course, which features hands-on training with supporting theoretical instruction.

HRTC 907 Design for the Town Garden (24 hours) — Those who successfully complete the course will know how to design landscape, prepare and read a site plan, identify uses of space and material functions. Designed to enable graduates to design

and maintain their yards and gardens successfully. Will increase the job opportunities of persons focusing on horticulture. Topics include general layout, estimating and cost management, grading and drainage, structural facilities and materials, soil improvements, plant materials, grass, maintenance, landscape philosophy, and history of landscape design.

HRTC 911 Plant Identification (24 hours) — This general interest course is suitable for professional landscapers or others whose occupation requires a knowledge of plants common to the area, and will also please recreational and outdoors enthusiasts who wish to be better informed about vegetation common to the area. Students will be taught proper terminology and methods of identifying most plants which grow on the West Coast of Canada, greenhouse plants and household plants. Theoretical instruction is complemented by field trips. A certificate of attendance in "Plant Identification" is issued to students who complete the course.

HRTC 912 Plant Propagation (18 hours) — Nursery workers or those in similar occupations will find the knowledge gained in this specialty course essential to their careers; of value to home gardening enthusiasts. Students are taught how to grow plants and the wide variety of methods for starting new plants. Topics include stem and leaf cuttings, root cuttings, divisions and layering, planting procedures for seeds, environmental factors, propagation houses, grafting and budding, and bulb planting.

HRTC 914 Christmas Floral Arrangements Professional (16 hours) — Provides students with hands-on training in all types of floral Christmas decorations. They will learn to design floral table and mantel arrangements, wreaths and corsages. Flowers will be supplied. Upon completion of the course students will be able to create various arrangements.

HRTC 915 Lawn Maintenance for the Homeowner (24 hours) — This course is designed for persons who are interested in professional lawn maintenance. Upon successful completion, students will be competent in the basic skills of site preparation, seeding, turfing, mowing, fertilizing, watering, thatch, weed control, moss, insect and disease control.

HRTC 917 General Horticulture for Gardening (30 hours) — Of interest to home gardening enthusiasts. Basic horticulture theory, landscaping techniques, disease and insect pest identification are covered together with plant association of trees, shrubs and perennials, how to design a small garden, lawn establishment and care, proper pruning techniques; soil management and care, plant propagation, organic gardening techniques, winter flowering shrubs, greenhouses and coldframes, bulbs, difficult and rare plants.

Landscape Technology

W. Hooge, B.S.A., P. Ag., Program Coordinator
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Program Advisor
Telephone: 432-8467

The program leading to the award of the Intermediate Certificate of Technology in Landscape Technology consists of landscaping courses plus mandatory core courses and other technology courses to the required total credits. All programs must be submitted to the program consultant for approval by the Technology Department.

INTERMEDIATE CERTIFICATE OF TECHNOLOGY IN LANDSCAPE

		Credit
COMM 160	Introduction to Business and Technical Communication	3.0
LAND 101	Structural Materials	3.0
LAND 102	Soil Improvement	4.5
LAND 103	Grading and Drainage Plan Production	3.0
LAND 104	Basic Horticulture	4.5
LAND 105	Plant Introduction	3.0
LAND 201	Landscape Structurals	3.0
LAND 202	Plant Material Study	3.0
LAND 203	Planting Plan	4.5
MATH 101	Technical Mathematics 1Trigonometry	3.0
MATH 102	Technical Mathematics 2Logarithms and Analytic Geometry	3.0
MECH 140	Drafting Fundamentals	3.0
MECH 214	Drafting: Structural	3.0
	Elective	1.5

Elective Courses

LAND 106	Pesticides for Retailers and Landscape Applicators	1.5
LAND 204	Parks and Recreation	4.5
LAND 205	Management for Landscape	3.0
LAND 206	Cost Estimation	4.5
LAND 207	Landscape Irrigation	3.0
LAND 208	Sports Turfgrass Management	3.0
LAND 501	Land Use Technology Introduction	3.0
SURV 108	Engineering Survey	7.0

Course Descriptions

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communicating in business and industry. It offers practical techniques for planning, organizing, selecting and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs — routine memos, instructions, procedures and summaries. Oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

LAND 101 Structural Material — An introductory course in structural material for students with little or no experience of Landscape Technology. Structural materials include rock, brick, wood, asphalt, concrete, glass and plastic. The student studies the origin, qualities and use of materials in landscape design and management; appropriate materials for particular jobs, and a cross-section of these materials with specification exercises. Topics include selection and location of materials in the landscape. **3 credits**

LAND 102 Soil Improvement — For those concerned with landscape development, this course in soil technology forms the first part of the horticulture section within the Landscape Technology program. Discussion includes soil chemistry, biology and soil mechanics; the means and methods of soil improvement for plant development; drainage and irrigation; soil compaction, permeability and soil pressure. Topics include subsoils, topsoils; organic and inorganic soil improvement mediums; erosion control; surface and subsurface drainage; irrigation; earth pressure of concern for retaining walls and foundation structures in landscape projects. **4.5 credits**

LAND 103 Grading and Drainage Plan Production — For persons with some previous training in technical drafting and

knowledge of soil technology in landscaping. Students learn to produce detailed plans showing grading of areas for landscape projects, and study government regulations for grading and drainage of land. Students practice drafting exercises in detailed plan production. A home assignment is presented on the last night of the course. Prerequisite: MECH 214. **3 credits**

LAND 104 Basic Horticulture — The second part of the horticulture section of the Landscape Technology program, this introductory course in horticulture and plant protection for landscape use provides the novice with a working knowledge of plants and their value in landscape development. Students study botany (plant classification and identification), plant propagation, plant food requirements, hardiness, the handling and protection of plants from nursery to future site. Ways of preparing plants for herbariums are discussed and a herbarium is started. Prerequisite: LAND 102. **4.5 credits**

LAND 105 Plant Introduction — The third part of the horticulture section of the Landscape Technology program, this introduction to plant material for landscape development consists mainly of field trips. The student learns suitability, size, form, color and growing habits of trees, shrubs, vines and climbers, perennials, annuals and other herbaceous plants in this climatic zone. Topics include native trees, street trees, older park shrubs, herbaceous plants and turf. Students collect specimens for the preparation of an herbarium for the subsequent course LAND 202. Prerequisite: LAND 104. **3 credits**

LAND 106 Pesticides for Retailers and Landscape Applicators — For persons engaged in retailing, commercial landscape maintenance or nursery crop production, who intend to write examinations under the Pesticides Act to become certified pesticide-dispensers- applicators. Students study pesticides used in B.C. and have the opportunity to write the Pesticides Act examination, under the direction of the B.C. Ministry of the Environment, in the sixth week of the course. Topics include legislation, pesticide safety, pesticide formulation, prescribed uses, data interpretation in various bulletins and the responsibilities of pesticide applicators- dispensers. **1.5 credits**

LAND 201 Landscape Structurals — Introduces the production of detailed plans for use in the landscape industry to persons with basic knowledge of landscape materials and fundamental drafting techniques. Students learn to prepare landscape design drawings and detail plans for structural items commonly used in landscape projects. The course includes lectures, field trips and drafting practice covering access — driveways, walks, etc.; retention — walls, cribbing, piling, bulkheads, fencing; water — ponds, streams, waterfalls; miscellaneous — seats, fireplaces, landscape lighting; presentation drawings — preparation, method of presentation, sketches; site work. Prerequisite: LAND 101, MECH 214. **3 credits**

LAND 202 Plant Material Study — The fourth part of the horticulture section of the Landscape Technology program discusses plant materials and their suitability for use in particular landscape projects. Students study types and varieties of indigenous and exotic trees, shrubs, herbaceous and evergreen ground covers and vines, and the characteristics and values which aid in the selection of these materials for use in landscape. The course includes descriptions and characteristics, varieties, landscape use and value, cultural conditions, seven to ten year growth patterns, hardiness zones, availability and available sizes. Each student researches specific varieties and species and includes these, with course material, in a handbook for future reference. Prerequisite: LAND 105. **3 credits**

LAND 203 Planting Plan — The fifth part of the horticulture section within the Landscape Technology program, this course in planting plan production drafting allows persons with some knowledge of horticulture, soil and plants, and with experience in technical drafting, further study of plant material for use in landscape projects and detailed planting area layouts. Students learn climate and soil tolerances, and to produce detailed planting plans for a given land development master plan in B.C. Topics include climate and soil conditions; solitary, group and mass planting; plant size and quality; plant spacing; specification of material and planting procedures. Prerequisite: LAND 103, 201, 202. **4.5 credits**

LAND 204 Parks and Recreation — An introductory course in the design of parks and recreational facilities and-or their maintenance. Students study the basic facilities required for public parks and recreation areas; the layout of areas for indoor-outdoor sports and other recreational facilities; maintenance requirements for recreational facilities. Course content includes planning principles, space requirements for sports, art education etc.; facilities, swimming pools, ice arenas, lawn bowling, curling, golf, marinas, resorts, beaches, children's playgrounds; general features, fences, walls, lights, parking and general maintenance. Students design and make drawings for a major community park. **4.5 credits**

LAND 205 Management for Landscape — Introduces landscape technicians to management skills required in landscape development including the legal requirements affecting land use, contract documentation, ethics and professional liability. The student studies professional responsibilities in respect to the consultant's relationship to client-contractor; contractor-client relationship; production of contract documents; legal liability, contract supervision. **3 credits**

LAND 206 Cost Estimation — For persons with limited or no experience in cost estimation for landscape projects. An introduction to methods of area and volume survey from landscape plans; study of work capacity; administration and maintenance costs including quantity and capacity as bases for cost estimation; methods of journal keeping and accounting. Topics include mathematics, surface, area, volume; weights and measures; cuts and fills; work capacity, man-hours, equipment; overhead expenses; journals; bookkeeping and an introduction to the metric system. **4.5 credits**

LAND 207 Landscape Irrigation — Provides technical information and basic training for persons associated with or interested in turf and landscape irrigation. Topics include basic hydraulic theory, system design and construction fundamentals; scientific and practical aspects of water application; installation, operating and maintenance procedures for major types of irrigation systems. **3 credits**

LAND 208 Sports Turfgrass Management — An introductory course in turfgrass management for persons associated with maintenance of golf courses, municipal parks and outdoor recreational facilities. Topics include turfgrass botany (classification, nomenclature, identification and utilization); weed, disease and insect problems and control strategies; soils (introduction and classification); soil amendments and fertilizers; tillage and cultivation systems, irrigation principles, equipment design and construction. **3 credits**

LAND 501 Land Use Technology Introduction — An introductory course for those involved in land use management of public areas; private development, local and regional planning departments, federal and provincial agencies. This course includes historical, ecological, economic and legal perspectives of land use; the principles and usage of land based resources with references to land capability, economic constraints, environmental issues and legislation. Also included are inventory, gathering, storing and presentation of information techniques within the frame work of planning principles. **3 credits**

MATH 101 Technical Mathematics 1: Trigonometry—A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic and semilogarithmic graphs and the geometrical and practical properties of conic sections and polar-rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MECH 140 Drafting Fundamentals—An introductory course for persons with little or no experience in graphics. Students are required to purchase drafting equipment and supplies on the first night of class. Students learn to produce and read simple drawings. Topics include scales, geometric constructions, basic orthographics, detail interpretation, line visibility, dimensioning, auxiliary views, true shape, inclined and skewed surfaces, sections, pictorials, working drawings and freehand sketches. **3 credits**

MECH 214 Drafting: Structural — A general insight into graphical aspects of structural problems for managers, construction workers, foremen, planners and estimators. Students study the application of drawing skills and techniques to structural engineering. Drawing assignments relate to wood frame, reinforced concrete and steel structures. Prerequisite: MECH 140. **3 credits**

SURV 108 Engineering Survey—Covers the basic use of levels — open plate and optic transits, tape measurement methods of horizontal distance and direction determination. Computations:slope reduction, open and closed traverse calculations, benchmark levelling, steel and tape correction techniques, electronic distance measurements, stadia work, tachometers, route surveys, earth work, site work, construction control. Upon completion, students can use a variety of survey instruments and office procedures, and make plans, profiles and maps to determine precise sizes, shapes and locations. **7 credits**

Mining Technology

J. Fairley, Program Co-ordinator
Telephone: 432-8323
Program Advisor
Telephone: 432-8467

Course Descriptions

MINE 101 Geology — Definition, basic concepts, earth's crust, geologic time, atomic structure of minerals, crystal forms and symmetry systems; properties of common minerals; sedimentary rock types; clastic and chemical sedimentaries; igneous rock types; classification, deformation of earth's crust: folds, faults, metamorphic rocks; weathering erosion, and glaciation. **3 credits**

MINE 151 General Interest Geology — Designed for part-time and full-time prospectors, the course studies the common rock-forming minerals, rocks and ore minerals; geological structures and what constitutes an ore deposit; topographic and geological maps and the procedure for staking claims; the use of the magnetic compass, air photographs, scintillometer, UV lamps, gold pan, and geochemical soil sampling kit, and the applications of geophysics and diamond drilling. The topics are studied in a very practical "hands-on" approach. A full day field trip is included during the term. **3 credits**

MINE 154 The Mining Industry — Provides a background for those unfamiliar with the mining industry. Introduces the importance, nature, sub-divisions and economic framework of the mining industry; exploration techniques — brief descriptions of geology, geophysics and geochemical principles; mining methods — surface and underground, particularly those common in B.C., reclamation; treatment methods — ore values are concentrated with crushing, grinding, flotation, gravity separation, leaching and other operations. Smelter contracts and mine evaluations can be covered. **3 credits**

MINE 201 Geology 1 — Economic geology, mineral fuels, nonmetallics, ore deposits and their controls; geological history: pre-Cambrian, Paleozoic, Mesozoic, Tertiary, Pleistocene; geologic maps. Prerequisite: MINE 101. **5 credits**

Petroleum Technology

D.A. Campbell, B.A. (Hons.), M.Ed., Program Co-ordinator
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Program Advisor
Telephone: 432-8467

Course Descriptions

PETR 152 Gas and Oil Production and Transmission — Provides an introduction to the exploration, drilling, production and transmission of petroleum products. Topics include: exploration, testing-evaluation, production, pipeline design, specification control, maintenance, terminals-stations, drilling, completions, treatment, hydrate control, testing, compressors, measurement. Enrolment is open and there are no prerequisites. Offered in 1988-89 and alternate years. **6 credits**

PETR 154 Gas Distribution and Utilization — Provides an introduction to the operation of a natural gas distribution system. Topics include: contracts, planning, measurement, gas load control, maintenance, combustion, LNG and CNG, codes and safety, customer service-sales, pressure control, construction, design, natural gas utilization, alternate fuels. No prerequisites required. Offered in 1988-90 and alternate years. **6 credits**

PULP AND PAPER TECHNOLOGY SUMMER INSTITUTE

The annual Pulp and Paper Technology Summer Institute, a well-established technology program in the field of pulp and paper manufacture, has been presented yearly at various locations in British Columbia since 1979. It is always offered in the second week of June.

The program presents an overview of the pulp and paper industry together with current innovations in technology; it is presented by speakers recruited from pulp and paper and related industries. The discussions are directed primarily to the principles and methods of manufacture, however, emphasis is placed on product quality within various unit processes, and their potential effect on end-use application.

A Certificate of Attendance is issued to students who successfully complete the program.

For further information contact:

Gordon Harris, Technical Program Coordinator and Co-chairman
Telephone: 435-1908
Stephen Berghold, Program Coordinator, Pulp and Paper Technology
Telephone: 432-8267

Wood Products Manufacturing

H. Kettner, Coordinator
Telephone: 432-8885
Program Advisor
Telephone: 432-8467

LUPL 110 Wood Products Manufacturing — Persons interested in the manufacture of lumber and plywood will enlarge their knowledge of the equipment and methods used. Correct manufacturing techniques are examined to give an understanding of sawing, drying and planing of lumber, peeling and drying of veneer, and plywood construction. Management principles studied include guidelines for supervisors, control of quality and recovery, equipment and saw maintenance, safe plant environment, cost controls and pollution abatement. Field trips will be arranged to examine a lumber and plywood plant. **7.5 credits**

RENEWABLE RESOURCES TECHNOLOGIES

Roy Strang, B.Sc., Ph.D., R.P.F., Associate Dean, Renewable Resources
Telephone: 432-8270

Avalanche Safety Training Program
Forestry, Wildlife and Recreation
Salmonid Enhancement Training Program

Avalanche Safety Training Program

Technical enquiries about these courses to:
Peter Schaerer, National Research Council Canada, Avalanche Centre
Telephone:(604)666-6741

Registration enquiries to:
Garry Walton, Coordinator
Telephone: (604)531-4300

A series of non-credit training courses for professionals in the field which are designed to meet the needs of operations concerned with avalanche safety—ski areas, ski guiding, highway operations, railways, mining, logging, etc.

Avalanche safety training in British Columbia is a joint venture between the NATIONAL RESEARCH COUNCIL CANADA, CANADIAN AVALANCHE ASSOCIATION and BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY.

Students who successfully complete any of the three courses in the Avalanche Program receive a Certificate of Completion which is recognized by BCIT, CAA and NRCC.

Support and assistance to this program is provided by:

- Association of Canadian Mountain Guides
- Blackcomb Skiing Enterprises
- Canada West Ski Areas Association
- Ministry of Forests and Lands, Province of B. C.
- Ministry of Transportation and Highways, Province of B. C.
- Parks Service, Environment Canada
- Whistler Mountain Ski Corporation
- Skiing Louise Ltd.

Course Descriptions

AVAL 951 Avalanche Safety for Ski Operations Level 1 (64 hours) — Designed for advanced-intermediate skiers (with some touring experience) who work in ski operations and are involved in ski activities that directly affect the safety of the public. The course enables students to identify avalanche terrain; state the character and hazards involved; state the formation of avalanches; apply personal safety measures; participate in avalanche search and rescue; assist with the collection of weather, snow pack and avalanche activity data. **non credit**

AVAL 952 Avalanche Safety for Ski Operations Level 2 (72 hours) — Designed for professional ski and mountain guides, ski area snow safety personnel and avalanche technicians. The course enables students to evaluate terrain; collect and evaluate weather, detailed snowpack and avalanche activity data; forecast snow stability; evaluate current avalanche hazards and make operational decisions. Prerequisite: AVAL 951 or equivalent; 100 recorded days of related field experience; familiarity with Canadian guidelines for observation of weather, snow pack and avalanches. **non credit**

AVAL 953 Avalanche Safety for Transportation and Industry Level 1 (45 hours) — An introductory course for supervisors and technicians whose work involves the construction or maintenance of transportation and utility corridors, and those who make decisions directly affecting the safety of their employees and the public. The training focuses on learning to monitor potentially hazardous areas. The course teaches the student to identify avalanche terrain; state the character and hazards involved; state the formation of avalanches; apply personal safety measures; participate in avalanche search and rescue; assist with the collection of weather, snow pack and avalanche activity data. **non credit**

AVAL 954 Avalanche Terrain — For engineers and technicians who are responsible for the design and location of recreational, industrial, transportation and utility facilities in areas subject to avalanche activity. In order to make adjustments for real or potential hazards, designers must be able to recognize and evaluate terrain, know where expert advice is available and be able to apply appropriate safety and preventive measures. **non credit**

AVAL 955 Avalanche Control — Specially designed for operational avalanche control. At the end of the course, participants will be able to describe options and prioritize avalanche control methods; describe operational safety measures; define the protective methods required to apply control; define local, provincial and federal regulations regarding avalanche control; state appropriate methods for explosives and application; participate as a team in the use of hand charges, case charges, cornice removal and avalancher; dispose of explosive duds; evaluate effect of control methods. Prerequisite: AVAL 951 or equivalent, and NRCC approval of background. **non credit**

Forestry, Wildlife and Recreation

A.G. Jakoy, B.S.F., M.Sc., R.P.F., Program Coordinator
Telephone: 434-5734, local 5275-5278
D. Campbell, Dipl.T., Dipl. Adult Ed., Log Scaling Coordinator
Telephone: 434-5734, local 5276
Program Advisor
Telephone: 432-8467

Course Descriptions

FSTR 120 Ecology of Southern B.C. Introduction — This course is a field trip through Southern B.C. focusing on the geology, ecology and wildlife of the region. Preceded by three introductory lectures, the field trip will cover the Fraser Valley, Fraser Canyon and Southern Interior areas. **2 credits**

FSTR 154 Principles and Practices in Wildlife Management — An introduction to wildlife management covering the basic ecological principles upon which practice is based, and exploring the biology and habitat requirements of common native wildlife species. Basic wildlife techniques are explained, including techniques for habitat improvement. At the end of the course, a day is spent in the field examining local wildlife areas. Suitable for lay persons, such as naturalists or hunters who want a better understanding of wildlife management, and useful to technical and professional graduates in such fields as agriculture and forestry whose work involves wildlife. **3 credits**

FSTR 156 B.C. Fish and Fisheries — Provides basic information and technical data relating to B.C. fish and their management for naturalists, sportsmen, foresters, agriculturists and others in the resources field. Students learn about the biology and characteristics of numerous species of B.C. fish, and develop an insight into the parameters of fisheries management. The course examines population dynamics, fish physiology, survey techniques, pollution sampling, resource problems, and the effects of B.C. fishing regulations. Examination and discussion of preserved specimens supplemented with presentations related to the biology of the species under discussion. The remaining sessions deal with management aspects of the fisheries resource. **3 credits**

FRTR 157 Log Scaling — Prepares candidates for the B.C. Forest Service Licensed Scalers Examination (Coastal). Students learn the skills involved in accurate measurement, volume estimations and grading of coastal logs, through classroom sessions and practical scaling in various locations along the north arm of the Fraser River. Scale sticks and life vest supplied; students must supply suitable caulk boots. Emphasis is on the new B.C. Government metric scale and current (1981) coastal log grades. Appropriate for people with some knowledge or experience in the logging industry. **7 credits**

FSTR 250 Ecology — Introduces students to the basic concepts and terminology of ecology. Develops an appreciation for the components of ecosystems including man and his activities; outlines the energy flow in and management aspects of numerous eco-systems. Students learn to identify numerous eco-systems of terrestrial and aquatic environments, describe energy fixation transfer in them and recognize approaches to proper management. The material is presented in the form of lectures and tutorials. Approximately four field trips are held on Saturdays and Sundays in lieu of classroom sessions. Students should be prepared to provide their own transportation (car pools).
4.5 credits

FSTR 426 Forest Administration — Many of the functions once performed by government agencies and industry in the natural resource field are now being contracted out. This course is designed for people interested in embarking on a career in service contracting to the natural resource industry. Upon successful completion of this course, students will have a basic knowledge of small business planning, be able to read and understand financial statements, understand simple double-entry accounting principles, be able to project a business plan for entrepreneurial activities and develop estimates for contract work. **6 credits**

FSTR 921 B.C. Log Scale fbm Course — This course is for licensed log scalers who require endorsement in imperial measurements using foot board measure. The course includes classroom sessions and practical scaling in various locations along the north arm of the Fraser River. Scale sticks and life vest supplied; students must supply suitable caulk boots. Prerequisite: FSTR 157 or equivalent or log scaling ticket. **non credit**

FSTR 922 Log Scaling Refresher Course- A five day refresher course to prepare candidates for the B.C. Forest Service Licensed Scalers Examination (Coastal). The course includes classroom sessions and practical scaling in various locations along the north arm of the Fraser River. Scale sticks and life vest supplied; students must supply suitable caulk boots. Emphasis is on the new B.C. Government metric scale and current (1981) coastal log grades. Prerequisite: FSTR 157 or equivalent or log scaling experience. **non credit**

FSTR 940 Starting a Business in Wilderness Tourism — This course is oriented towards those who would like to work in the tourism field as it relates to outdoor recreation. It is well suited to "would-be entrepreneurs" and includes material pertinent to fishing lodges, commercial river running, guided hikes, hunting lodges, sailing charters, diving ventures, climbing schools, horseback riding packages, etc. Specific examples are discussed and business and marketing concerns are elaborated upon. Start-up needs for various packages will also be addressed. **non credit**

SALMONID ENHANCEMENT PROGRAM

A series of seven courses designed as part of the Federal-Provincial Salmonid Enhancement Training Program. The courses are offered by special request only.

FSTR 931	SETP - Introduction to Salmonid Enhancement
FSTR 932	SETP - Fish Health Level 1
FSTR 933	SETP - Environmental Awareness Level 1
FSTR 934	SETP - Bio-reconnaisance
FSTR 935	SETP - Ponding and Feeding
FSTR 936	SETP - Project Management 1
FSTR 937	SETP - Project Management 2

Academic Support

Brian Gillespie, B.Sc., M.Sc., Ph.D., Dean
Kent Yakel, B.Sc., (Hons.), M.Sc., Associate Dean
Marv Woolley, Dipl.T., A.Sc.T., Acting Director
Sharon Cameron, Clerical Assistant

Chemistry
Communication
Mathematics
Physics
Pre-entry Courses
Technology Fundamentals Program

For details of correspondence courses in Math, Physics and Chemistry, call 432-8234.

BCIT offers Communication, Chemistry, Mathematics and Physics courses for full-time and part-time programs.

Pre-entry courses are offered throughout the year to students needing entrance requirements for BCIT. These courses will be of interest to mature students who need refreshers, or to students who do not have the necessary prerequisites for entrance into BCIT programs.

Academic support courses are offered throughout the year in many forms:

- as part-time evening classes
- as part of full-time program requirements
- as part-time day-time classes (usually in the summer term)

Interested students are encouraged to call 432-8723 or Student Services at 434-3304, for further information.

Course Descriptions

CHEMISTRY

CHEM 101 Applied Chemical Principles 1 — Provides the necessary background for chemical calculations and analysis. Included are stoichiometry, atomic structure, bonding, solution preparation and acid-base and oxidation-reduction reactions and their titrations. Lab work consists of qualitative and quantitative analysis using good lab technique. This course meets the Chemistry 12 entrance requirement for BCIT. Prerequisite: Chemistry 11 or CHEM 001. **6 credits**

CHEM 201 Applied Chemical Principles 2 — A continuation of CHEM 101 which includes theory of gravimetric and volumetric analysis, and qualitative analysis of cations and anions. Electrochemistry includes cells, electroplating and corrosion. Study of physical chemistry provides theory of solids, liquids, gases leading to fractional distillation and colligative properties. Lab work covers qualitative and quantitative analysis. Throughout CHEM 101/201 attention is given to industrial and everyday applications. Prerequisite: CHEM 101. **9 credits**

CHEM 317 Gas and Liquid Chromatography — Introduces students to the use of gas chromatography (GC) and high performance liquid chromatography (HPLC) for solving organic analysis problems related to the energy, chemical, food and forest industries as well as clinical and environmental laboratories. The course lectures will cover such topics as separation, theory, instrument operation, trouble shooting, detectors, quality and quantity analysis applications and sample preparation. Laboratory experiments will demonstrate the principles covered in the lectures. **3 credits**

COMMUNICATION

Equivalence for Communication full-time and part-time programs.

For equivalence to full-time first year Business Communication, take COMM 160, COMM 175 and COMM 171 in that sequence.

For equivalence to full-time first year Technical Communication, take COMM 160, COMM 175 and COMM 183 in that sequence.

English Language Proficiency Requirement

Students enrolling in Communication courses who have severe language difficulties may be referred to other, more appropriate courses.

The following Communication courses are offered in 12-week, 3-day and other flexible formats. BCIT Communication courses are practical and are designed to help people write efficiently on the job.

COMM 160 Introduction to Business and Technical Communication — Introduces students to the basics of communicating in business and industry. It offers practical techniques for planning, organizing, selecting and presenting information. Effective business and technical style is also covered. Students apply these skills to communications common to most office jobs - routine memos, instructions, procedures and summaries; oral presentations are also covered. Practical "case" assignments are used. For those with little experience in business or technical communication. **3 credits**

COMM 171 Business Reports — Gives business writers practice in writing problem-solving reports and proposals. The emphasis is on the persuasive skills needed to sell ideas, methods and products. Specific applications include comparison and recommendation reports, proposals, feasibility studies, executive summaries and formal report format. It also covers persuasive presentations and effective use of graphics. **3 credits**

COMM 175 Letters and Memos — Covers communications inside and outside the office. Internal correspondence includes routine requests and replies and short, informal memos. External correspondence includes request, reply, sales and collection letters. Job applications and resumes are also covered.

COMM 183 Technical Reports — Gives writers from technical or industrial backgrounds practice in writing problem-solving reports. The emphasis is on the communication skills needed when solving engineering problems. Specific applications include comparison and feasibility reports, technical proposals, journal reviews, executive summaries, graphics and formal report format. Persuasive presentations are included. **3 credits**

COMM 189 Writing Effective Letters — This 18-hour course covers the principles of letter style and organization and applies them to sales, collection, inquiries, claim adjustment and application letters. Participants are encouraged to work on letters from their workplace. The course is offered in weekend and 3-day formats at the Burnaby and Downtown campuses or at the request of individual companies. **1.5 credits**

COMM 190 Writing for Results — This 18-hour course is for people who want a refresher course on general business writing skills in short, intensive workshops. Participants learn simple techniques to make their writing clearer, better organized and more effective in getting the job done. The course covers techniques for memos, letters, reports and other major forms of written communication. It is offered in weekend and 3-day sessions. Participants are encouraged to work on writing from their workplace and are requested to bring samples of their writing to the first class. **1.5 credits**

COMM 192 Short Reports — This 18-hour course covers selecting and organizing information, using effective formats and layout, analysing audience needs, reporting factual information and making recommendations. It is offered in 3-day formats at the Burnaby and Downtown campuses or at the request of individual companies. **1.5 credits**

COMM 196 Writing for the Computer Industry —This 18-hour course is for anyone who writes user manuals. It covers planning, researching, organizing, formatting and writing the manual and testing and packaging the finished product. It emphasizes techniques for translating technical material for the non-technical reader. The course is offered in 3-day formats at the Burnaby and Downtown campuses. **1.5 credits**

COMM 900 English Fundamentals — This 36-hour practical, refresher course focuses on writing clear sentences and paragraphs. The course includes sentence structure, word choice, common grammatical problems, techniques for listing, paragraph structure, and simple presentation strategies that help writers communicate clear messages. This course will give you confidence in your ability to focus your ideas and use the conventions and mechanics of the language. This course is designed for students whose first language is English. If English is your second language, enrol in COMM 004. **non credit**

COMM 902 Teamwork in the Office — This 8-hour course covers strategies for promoting cooperative, productive team relationships in a corporate setting. It teaches managers how to define roles, rules, and rewards, and create an open communication system within and between departments. **non credit**

COMM 903 Proposals: Writing, Selling and Following Through — This three-day course covers the language, organization, presentation and packaging of effective sales and technical proposals. Participants are encouraged to write proposals from their work. This course includes follow-up. **non credit**

COMM 908 Making Meetings Work — This 8-hour course will make business meetings more productive. It covers how to prepare agendas, structure and control discussion, make decisions and write minutes. The course is offered at the Downtown campus or at the request of individual companies. **non credit**

COMM 910 Telephone Techniques — This one-day course offers an introduction to effective business telephone techniques. Through classroom discussion, prerecorded sample calls and role playing, participants will learn how to make a positive first impression with customers and to handle and record calls efficiently. It is offered at the Downtown and Burnaby campuses or at the request of individual companies. **non credit**

COMM 911 Managing Team Writing — This 18-hour course is for managers who supervise and edit other people's writing. It covers techniques for plotting a critical path, building a project team, specifying requirements, designing report segments, making revisions and packaging the finished product. It also reviews the meeting and interpersonal skills needed to manage the project. This course is offered at the Downtown campus or at the request of individual companies. **non credit**

COMM 913 Publicity for your Organization — Shows you how to formulate and carry out a plan to attract media attention and get free publicity for your club or organization. It covers the various ways media operate and the kinds of information each needs. You'll learn how to formulate a "media event", write a press release and carry out a telephone campaign. Girl Guide leaders, community organization volunteers, neighborhood action groups, or anyone working with a non-profit organization or involved in fund raising activities would find this course useful. **non credit**

TCOM 114 Technical Writing for Electrical/Electronics — An introduction to basic technical writing skills. Students develop competencies in planning, organizing and presenting information using graphics, writing technical descriptions, instructions, and routine technical correspondence. Students also prepare a resume and application for Co-op. Prerequisite: B.C. English 12 "C" standing. **4 credits**

TCOM 214 Technical Writing for Electrical/Electronics — A continuation of TCOM 114, this course develops competencies in writing short reports and system documentation, and delivering technical briefings. Prerequisite: TCOM 114. **4 credits**

Custom Courses in Communication in Your Company
All Communication courses can be delivered in-house for interest groups in 3-day, week-long, or other flexible formats. Special courses can also be designed to meet company communication requirements. Instructors will conduct needs assessments in the company and design relevant course materials. Please call the Communication Department at 432-8387 for more information.

MATHEMATICS

MATH 101 Technical Mathematics 1: Trigonometry — A course for engineering technology students in the application and theory of trigonometric functions including right angle trigonometry, radian measure, vector and triangle problems, trigonometric identities and graphing, polar co-ordinates, compound and double angle formulas, trigonometric equations and inverse functions. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 102 Technical Mathematics 2: Logarithms and Analytic Geometry — A study of the theory and applications of common and natural logarithms, and an introduction to analytic geometry. Topics emphasized are the plotting, interpretation and uses of logarithmic/semilogarithmic graphs, the geometrical and practical properties of conic sections and polar/rectangular transformations. A brief consideration of quadratic surfaces is included. Prerequisite: C+ or better in Algebra 12 or 65% or higher in MATH 001. **3 credits**

MATH 106 Probability and Statistics 1 — An introduction to statistical methods and their application to technological problems. This course includes the organization and graphical representation of data, frequency distributions, measures of central tendency and variation, probability theory, random variables, mathematical expectation, theoretical distributions, sampling, estimation, hypothesis testing, analysis of variance, and curve fitting (regression and correlation). Prerequisite: recent Algebra 12 or MATH 001. **3 credits**

MATH 113 Mathematics for Electrical Technology — An accelerated course based on the material covered in MATH 143. Open only to students currently registered in ELEC 208 and MATH 143 and by invitation. **6 credits**

MATH 122 Logarithms (Distance Education) — Flexible entry correspondence course that presents a study of the theory applications of common and natural logarithms including plotting of logarithmic/semilogarithmic graphs and their interpretation. Equivalent to the Logarithms portion of the P/T offering MATH 102. ASTT accredited when taken with MATH 124. **1.5 credits**

MATH 123 Trigonometry (Distance Education) — Flexible entry correspondence course that describes the theory and outlines the application of trigonometric functions of any angle, vectors and solution of triangles, graphs of function, identities, compound and double angle formulas, trigonometric equations and inverse functions. Equivalent to the P/T offering MATH 101. ASTT accredited. **3 credits**

MATH 124 Analytic Geometry (Distance Education) — Flexible entry correspondence course that emphasizes geometrical and practical properties of conic sections and includes polar coordinates and transformations. Equivalent to the Analytic Geometry portion of the P/T offering MATH 102. ASTT accredited when taken with MATH 122. **1.5 credits**

MATH 125 BASIC 1: An Introduction to Microcomputers IBM PC — Designed for engineering technology students with no previous BASIC programming or microcomputer experience. Topics include computer terminology, hardware, disk operating system, commands, BASIC language concepts (input/output, BASIC arithmetic and functions, relational operators, branching statements, subroutines and graphics statements). **3 credits**

MATH 126 BASIC 2: An Introduction to Microcomputers IBM PC — A sequel to MATH 125 presenting further concepts and features of the BASIC language for engineering technology students. Topics include further input/output arrays, machine language statements, additional computer graphics and file operations. Prerequisite: MATH 125. **3 credits**

MATH 143 Basic Technical Mathematics for Electronics — Common and natural logarithms, logarithmic/semilogarithmic graphs, decibels, exponential growth and decay. Systems of linear equations, determinants, application to electrical networks. Trigonometric functions, identities, solution of triangles, graphing and addition of sinusoidal functions. Complex numbers, rectangular/polar transformations, phasor representation of sinusoidal waveforms. The format of this course is currently being changed. Please call 432-8698 for information on changes in course length, credits and topics covered. **8 credits**

MATH 203 Technical Mathematics 3: Calculus — An introductory course in calculus and its technical applications involving the differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions. The course emphasizes the application of calculus to engineering technology problems. This course will be offered in 89/90 and 91/92. It will not be offered in 88/89 or 90/91. **6 credits**

MATH 204 Technical Mathematics 4: Calculus — A continuation of MATH 203. Topics include further work on integration, partial differentiation, an overview of Maclaurin, Taylor and Fourier series, and the solution of differential equations with special consideration given to the use of Laplace transforms. Prerequisite: MATH 203. This course will be offered every third year only. The next offering will be in 89/90. **6 credits**

MATH 206 Probability and Statistics 2 — This course covers further hypothesis testing, chi-square distribution, analysis of variance and experimental design, non-linear and multiple regression and introduction to quality control. Prerequisite: MATH 106. **6 credits**

MATH 221 Calculus Module 1 (Distance Education) — Flexible entry correspondence course that introduces differential calculus. Delta-process, the derivative, differentiation rules for algebraic functions, implicit differentiation, instantaneous rates of change, curve sketching, applied maxima/minima, the differential. Prerequisite: Math 122,123,124 or equivalent(s). **3 credits**

MATH 222 Calculus Module 2 (Distance Education) — Flexible entry correspondence course that introduces integral calculus. Antidifferentiation, the indefinite integral, the trapezoidal rule and the definite integral with application to areas, volumes and centroids. Prerequisite: MATH 221 or equivalent. **3 credits**

MATH 227 Calculus Module 3 (Distance Education) — Flexible entry correspondence course that furthers the study of differential and integral calculus. Differentiation and integration of trigonometric, logarithmic and exponential functions. Prerequisite: MATH 222 or equivalent. **3 credits**

MATH 228 Calculus Module 4 (Distance Education) — flexible entry correspondence course that concludes the study of calculus. Expansion of functions in Maclaurin, Taylor and Fourier series, and solution of differential equations including separation of variables. Prerequisite: MATH 227 or equivalent. **3 credits**

MATH 243 Calculus for Electronics — The derivative, differentiation rules, applied maxima/minima and implicit differentiation with mean applications to electrical technology. Antidifferentiation, the indefinite integral and the definite integral including area, mean value and RMS value. Differentiation and integration of trigonometric, logarithmic and exponential functions. This course will be offered in 89/90 and 91/92. It will not be offered in 88/89 or 90/91. The format of this course is currently being changed. Please call 432-8698 for information on changes in course length, credits and topics covered. **7 credits**

MATH 306 Statistical Quality Control and Industrial Applications — Covers the application of statistical methods to quality control of industrial products, quality control charts and acceptance sampling. Prerequisite: MATH 106. **3 credits**

MATH 320 Matrix Algebra — A course in matrix algebra and its applications. Topics include matrix operations, solution of systems of linear equations, translations and rotations, eigen-values and eigenvectors. Students are expected to have some computer programming experience. Prerequisite: Algebra 12 or MATH 001. **3 credits**

MATH 343 Transform Calculus for Electronics — First and second order differential equations. The Laplace Transform as an integral function. Transform pairs for functions and operations, inverse transforms from tables, techniques of partial fraction expansion for inverse transformation. Poles, zeroes, s-plot,s-domain circuit diagram and applications. Transients in multimesh circuits, transfer functions and frequency responses to sinusoidal inputs. Fourier series, trigonometric Fourier coefficients and frequency spectrum. Prerequisite: MATH 243. This course will be offered in 88/89 and 90/91. It will not be offered in 89/90 or 91/92. The format of this course is currently being changed. Please call 432-8458 for information on changes in course length, credits and topics covered.
6 credits prior to 1989, 3 credits from 1989 on.

MATH 485 Computer Methods in Engineering Technology Using Pascal — Provides a good basic knowledge of the Turbo Pascal programming language using Turbo Pascal on an IBM PC or compatible computer. On successful completion of the course, students will be able to use computers to increase analysis and design productivity in engineering technology. The emphasis is on a structured programming leading to the writing and debugging of programs with applications in civil and structural engineering. **6 credits**

MATH 495 Introduction to the FORTH Programming Language — Provides a complete introduction to the fascinating "high tech" FORTH language used in programming applications from database managers through robotics control and artificial intelligence. The course will be based on the IBM PC and compatible computers. Students who bring a blank diskette to the first session will be provided with a copy of the public domain F83 FORTH system. Topics include FORTH characteristics and history, structured programming concepts, usage of FORTH programming editors and utilities, data structures, virtual memory and block I/O, extension of the FORTH compiler and construction of custom databases and editors. Overview will be given of FORTH internals, optimization with machine code and building new systems with a meta-compiler. **3 credits**

MATH 943 Math 143 Extension — This course is an extension of Math 143 and is required for students planning to enter Math 243. You need to take this transition course if you've taken Math 143 prior to Fall 1987. The January 1989 offering will be free of charge, after this offering a course fee will be charged.
non credit

MATH 944 Math 243 Extension — This course is an extension of Math 243 and is required for students planning to enter Math 343. You need to take this transition course if you've taken Math 243 prior to Fall 1987. **non credit**

PHYSICS

PHYS 106 Physics for Electronics Technology — A general level course about physical quantities, their properties, relationships, how they affect each other and their connecting principles. Motion, force, mechanical energy and power are studied concerning translational and rotational motion. Then follows basic electricity, atomic physics and the band theory of solids and its application to semiconductor devices. The lab program emphasizes measurements, data analysis and experimental techniques while confirming and expanding the lecture concepts. Math treatment requires algebra, trigonometry and vector analysis.
6 credits

PHYS 131 Physics 1 Part 1 — Topics include kinematics, statics, linear and rotational dynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable), **3 credits**

PHYS 132 Physics 1 Part 2 — Topics include properties of matter, heat and thermodynamics. Problem solving is emphasized and consistent effort is directed towards relating physics to various technological applications. Prerequisite: Algebra 12, (Physics 11 is desirable) and PHYS 131. **3 credits**

PHYS 133 Physics 2 Part 1 — Physics 2, with Physics 1, satisfies the knowledge required in various engineering and related technologies. Topics include sound, light and optics, basic electricity and magnetism, basic semi-conductor theory, atomic and nuclear phenomena. Mathematical treatment requires algebra and trigonometry and possibly some calculus. Prerequisite: PHYS 132.
3 credits

PHYS 134 Physics 2 Part 2 — See PHYS 133. Prerequisite: PHYS 133. **3 credits**

PHYS 136 Physics 1 (Distance Education) — Flexible entry correspondence course that provides students of technology with the principles of physics, particularly as they apply to technology. The relationships between technology and physics are emphasized, applications outlined and the scientific approach to problem solving is described. Study areas include measurement and data analysis, mechanics, elasticity and strength of materials, fluid mechanics and thermal energy. Prerequisites are basic maths, plane trigonometry and basic algebra. Equivalent to P/T Physics, accredited by ASTTBC. **3 credits**

PHYS 206 Physics for Electronics Technology — Continued from PHYS 106, a general level course covers magnetism and magnetic materials, fluids, thermal energy, vibrations and waves, optics and electromagnetic radiation, and modern physics. Application and principles in the electrical engineering field are stressed. The lab program emphasizes measurements, data analysis and experimental techniques while confirming and extending the lecture concepts. Prerequisite: PHYS 106. Mechanical Technology students can take this course for PHYS 216 equivalency with their prerequisite being MECH 217. Math treatment requires algebra, trigonometry and some calculus. **5 credits**

PHYS 236 Physics 2 (Distance Education) — The sequel to PHYS 136. Topics include: wave motion, sound and light sources, propagation and reflection of light, refraction and dispersion, interface and diffraction, illumination and color, electronstatics, direct current, magnetism, alternating current, atomic and nuclear physics. Prerequisite: PHYS 136 and a working knowledge of algebra, trigonometry and calculus. **4.5 credits**

PHYS 465 Electro-optics — This course covers radiometry, geometrical and physical optics, solid state properties of matter, sources, lasers, detectors, solar cells, modulators and fiber optics. Both introduction and applications are studied. Prerequisite: Grade 11 Mathematics and Physics. A BCIT Electronics Technology Diploma or equivalent is recommended. **3 credits**

PHYS 466 Fiber Optics — This course covers the physical properties of light, sources of light used in fiber optics, fabrication and properties of fibers, methods of coupling, waveguide characteristics, transmission and detection of light. Applications as sensors, image transmitters for medical and industrial inspection and in communication are discussed. Prerequisite: Grade 11 Mathematics and Physics. **3 credits**

PHYS 467 Remote Sensing — This course describes the passive system sensors of visible light, infrared and microwaves. Also includes active systems using radar and lasers. Aircraft and satellite platforms, data transmissiona and interpretation are covered. Applications include geology, oceanography, agriculture, dynamic processes and meteorology. Prerequisite: Grade 11 Mathematics and Physics. **3 credits**

Proposed Courses in Research and Development

As well as PHYS 465, 466 and 467 shown above, the Physics Department is currently developing courses in Lasers, Imaging Techniques, Exploration Geophysics and New Materials. For more information, call 434-5734, local 5316.

PRE-ENTRY COURSES

Pre-entry courses are individual day or night courses available for students who lack the necessary prerequisites to apply for their chosen technology programs, or for those who wish to prepare for their full-time studies workload.

Pre-entry courses are available in each of the BCIT terms: September, January, April and throughout the summer months (check the Part-time Studies flyer for dates, or phone 432-8723).

The following Pre-entry courses are available for those who need prerequisites or who wish to up-grade their existing grades:

MATH 001, MATH 002	For School of Health Sciences and School of Engineering Technology
COMM 001, COMM 002	Preparation course for every Technology
COMM 003	BCIT equivalent of English 12 for every Technology
COMM 004	BCIT equivalent of English 12 for English as a Second Language students
CHEM 001	Chemistry 11
PHYS 001	Physics 11

Course Descriptions

CHEMISTRY

CHEM 001 Pre-entry Chemistry 1 — An upgrading course for people whose background in chemistry is weak, and a refresher course for those who have not studied chemistry for several years. Meets the Chemistry 11 program entrance requirements for BCIT. **non credit**

COMMUNICATION

COMM 001 Effective Writing — Develops the basic skills needed for business and technical writing at BCIT. This 24-hour course prepares you for the heavy writing requirements in day school programs. You will find this course especially useful if you are uncertain of your skills in business and technical writing. Topics include organizations, paragraph development and effective sentences in letter and memo writing. **non credit**

COMM 002 Independent Learning Skills — This course teaches you how to study on your own, manage your time, cope with heavy workloads and get the most from new instructional techniques. It includes reading textbooks, learning from objectives, using computer-managed learning packages, reading efficiently, completing assignments, taking exams successfully and managing your time. **non credit**

COMM 003 Comprehensive Reading, Writing and Learning Skills — An integrated 80-hour course which emphasizes the reading, writing and study skills needed for entering a full-time program at BCIT. This course covers all the topics outlined in COMM 001 and COMM 002 as well as speed reading, reading comprehension, library research and short report format. A mark of 50% or higher in this course will meet the "P" English entrance requirement for BCIT. A mark of 65% or higher will meet the C+ prerequisite needed for some technologies. This course is designed for students whose first language is English. If English is your second language, enrol in COMM 004. **non credit**

COMM 004 Technical English as a Second Language — This 80-hour course is for students whose first language is not English, who have studied English, but who need practice in applying their language skills to technical studies or need to upgrade their English to meet the Institute's English language requirement. This integrated language course focuses on the reading, writing, listening and speaking skills required for technical communication, and will include reading efficiency, vocabulary expansion, sentence and paragraph development. At the end of the course an assessment will be given to determine whether you meet the Institute's English language requirement. **non credit**

MATHEMATICS

MATH 001 Technical Mathematics: Introduction — An upgrading and/or refresher course for students who have not completed high school math, or have completed it more than three years previously, or whose math background is otherwise weak. This course meets Algebra 12 entrance requirements at BCIT. Students intending to enter a technology which requires an Algebra 12 grade of C+ or better, must achieve a final mark of 65% or higher in MATH 001. Prerequisite: C or better in Algebra 11 or approved equivalent math course. **non credit**

MATH 002 Technical Mathematics (Distance Education) — Flexible entry correspondence course that satisfies the Algebra 12 entrance requirements for BCIT. Students intending to enter a BCIT technology which requires an Algebra 12 grade of C+ or better must achieve a final mark of 65% or higher in MATH 002. Students who have difficulty with mathematics or those who have been away from school more than three years are advised to take the classroom course (see P/T offering - MATH 001). Prerequisite: A pass in Algebra 11 or an approved equivalent mathematics course. **non credit**

PHYSICS

PHYS 009 Pre-entry Physics - This course is designed for those students who lack the physics prerequisite to enter their chosen technologies or those who anticipate difficulty in passing the physics course associated with their technology. The course offers an introduction to physics, its basic principles and common applications. Approximately two-thirds of the course deals with mechanics, the remainder with heat and geometric optics. Problem solving techniques are emphasized. Prerequisite: You are advised to have completed any necessary mathematics upgrading courses BEFORE taking PHYS 009. **non credit**

For details of correspondence courses in Math, Physics and Chemistry, call 432-8234.

TECHNOLOGY FUNDAMENTALS PROGRAM

Technology Fundamentals is an upgrading program to assist full-time studies applicants who lack some or all of the prerequisites for admission into BCIT programs.

Technology Fundamentals is a full-time program (Monday through Friday) beginning in September and January, and running for 15 weeks.

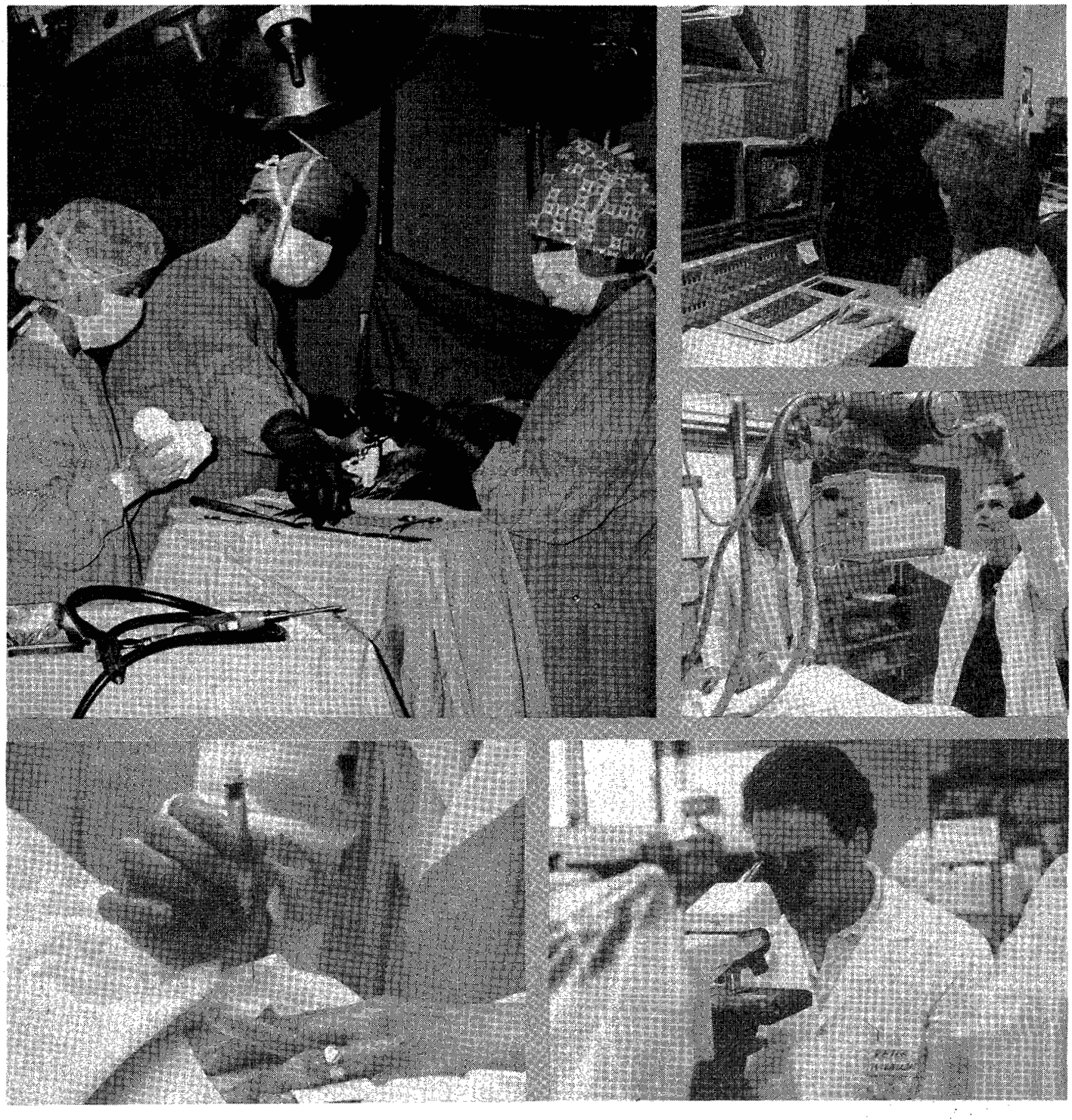
Applicants for admission into Technology Fundamentals must indicate which BCIT Technology program they are applying for and which session (September or January) of the Technology Fundamentals program they wish to enrol in. Technology Fundamentals application forms must also have all necessary documents attached.

Technology Fundamentals students may be guaranteed entry to their full-time technology programs, subject to successful completion of the Technology Fundamentals program. The participating technologies include:

School of Engineering Technology
- Biological Sciences
- Building
- Chemical Sciences
- Civil and Structural
- Electronics
- Forestry
- Mechanical
- Mechanical Systems
- Mining
- Petroleum
- Survey
- Wood Products Manufacturing

School of Health Sciences
- Health Record Administrator
- Health Record Technician
- Occupational Health and Safety

For further information contact 432-8433.



School of Health Sciences

Faculty and Staff

George Eisler, M.A.Sc., P.Eng., M.B.A.,Acting Dean

Kathleen Bach, B.A., Director
Ruth Byers, Supervisor
Marlene Isaac, Program Assistant, Advanced Nursing Specialties
Nancy Noble, B.Sc.(H.Ec.), Program Assistant, Health Technologies
Marjorie White, Program Assistant, Nursing

Health Part-time Studies

Programs and individual courses are available through Health Part-time Studies. These include update, advanced and qualifying courses in the health science field and may be taken for professional development, certification, or an advanced diploma.

Delivery Methods

Courses are delivered in a variety of formats.

a) Classroom delivery — one night per week, week long or weekends at BCIT Burnaby campus, the Downtown Education Centre or other locations in B.C. by arrangement;

b) Guided Learning — home study supplemented by teletutoring, teleconferences or seminars;

c) Clinical — short intensive periods of full-time study and clinical practice; may be clinical preceptorship or supervised practicum.

d) Challenge Courses — self directed study on the basis of course outline, objectives, and sample examination questions for students with on-the-job knowledge and experience.

e) Compressed Time Frames — offered cooperatively with hospitals. Some full time clinical and classroom instruction, together with Guided Learning, enables students to complete a specialty program in a shorter time.

Programs

Some courses are grouped in Certificate or Advanced Diploma Programs. Students wishing to take a complete program should consult with a program coordinator to have their program of studies approved.

Health Technologies

Health Care Management
- Level 1 Certificate Program
- Long Term Care
- Level 2 Certificate Program

Occupational Health and Safety Certificate
Health Information
- 2nd Year Equivalency under development

Nursing

- Certificate of Credit in Nursing
- R.N. Refresher
- Obstetrical Nursing (Qualifying)
- Psychiatric Nursing (Qualifying)

Advanced Nursing Specialties

- Corrections Nursing Certificate
- Critical Care Nursing Certificate
- Emergency Nursing Certificate
- Neonatal Nursing Certificate
- Obstetrical Nursing Certificate
- Occupational Health Nursing Certificate
- Operating Room Nursing Certificate
- Rehabilitation Nursing Certificate
- Medical-Surgical Supply Consultants Certificate

Advanced Diploma in Health Sciences

HEALTH TECHNOLOGIES

Health Care Management

Program Coordinator: Sonia Williams, B.A.(Hons.), M.Ed., M.S.R., F.S.R.

There are several levels of Health Care Management Studies (Level 1, Level 2 and Advanced Studies) leading to certification. These are supplemented by additional professional development courses in the Health Care Management field. The programs are designed to help managers, and would-be managers, sharpen their management skills and acquire new skills appropriate to their particular needs, while broadening their general perspectives on the health care field. Applicants should be employed in health care agencies or be graduates of a health paraprofessional, professional or technological program.

Applicants for the Health Care Certificate Programs must have their proposed programs of courses, and any revisions to existing programs of courses, approved by the program co-ordinator. These requests may be made in person or in written form. Contact Health Part-time Studies at the BCIT Burnaby Campus for an interview appointment and/or the necessary forms.

Transfer credits may be awarded for academic work completed at other recognized institutions according to the policy established for Health Part-time Studies. For further information see page in this calendar or contact the Health Care Management Program Co-ordinator at BCIT, Burnaby. Phone: 432-8666 or 432-8376.

Applicants not wishing to complete the entire program may enroll in any of the mandatory or elective courses.

HEALTH CARE MANAGEMENT CERTIFICATE PROGRAM LEVEL 1

This program, offered in cooperation with the British Columbia Health Association (B.C.H.A.), is designed for first level managers. It provides information and practice in the application of management principles to health care and long term care management. It is appropriate for department heads, administrators, head nurses and anyone anticipating a management position. The courses are offered in a variety of time frames outlined in the Health Sciences Posters published three times a year.

Students who have completed HMGT 600 Health Care Supervisory Skills will receive credit towards their elective course work. Preferably, this course will be completed before entering the Level 1 program.

Mandatory Courses		Credit	Hrs
HCSY 610	Health Care Systems	1.5	18
HMGT 601	Health Care Organizational Behaviour	3.0	36
HMGT 602	Health Care Principles of Management	3.0	36
HMGT 603	Health Care Operations Management	1.5	18
HMGT 604	Budgeting in Health Care	1.5	18
HMGT 605	Human Resource Management	3.0	36
HMGT 606	Health Labor Relations 1	1.5	18
or			
HMGT 607	Long Term Care Labor Relations	1.5	18

Recommended Electives

108 hours of elective course work from:

Administrative (General) Management

		Credit	Hrs
ADMN 211	Management 2	4.0	36
ADMN 322	Organizational Behaviour 2	3.0	36
ADMN 302	Problem Solving and Decision Making	3.0	36
COMP 101	Data Processing Introduction	3.0	36
FMGT 109	Accounting for the Manager	3.0	36
HMGT 600	Health Care Supervisory Skills	3.0	36

(should be completed before HMGT 601 and 602)

Education (Training)

ADMN 127	Training Techniques	3.0	36
ADMN 202	Course Design	3.0	36
ADMN 203	Instruction/Facilitation - Training	3.0	36
EDUC 601	Human Learning	2.0	18
EDUC 625	Using Audiovisuals in Education	1.0	12

Financial Management

ADMN 100	Microeconomics	4.0	36
ADMN 302	Problem Solving and Decision Making	3.0	36
COMP 101	Data Processing Introduction	3.0	36
FMGT 101	Accounting 1	4.0	36
FMGT 201	Accounting 2	6.0	36

Personnel

ADMN 204	Personnel Management	4.0	36
ADMN 205	Selection Interviewing	4.0	36
ADMN 304	Manpower Planning	4.0	36
ADMN 305	Salary Administration	4.0	36

Systems

COMP 101	Data Processing Introduction	3.0	36
COMP 160	Computer Systems - Introduction 1	3.0	36
or			
OPMT 188	Management Information Systems	3.0	36
OPMT 191	Purchasing	3.0	36
OPMT 192	Inventory Planning and Control	3.0	36

Recommended Pre-entry Courses

It is assumed that participants have well developed written and verbal communication skills. For those wishing to upgrade these skills, the following courses are recommended.

		Credit	Hrs
COMM 192	Short Reports	1.5	18
MKTG 323	Public Speaking and Oral Communication 1	3.0	36

LONG TERM CARE

Long Term Care Management is an integral part of the Health Care Management Program. Compulsory courses present management principles, then apply these principles to both health care and long term care situations. The course HMGT 607 Long Term Care Labour Relations is compulsory for all those selecting the Long Term Care stream.

Recommended Electives

		Credit	Hrs
ADMN 211	Management 2	4.0	36
ADMN 201	Counselling 1	3.0	36
ADMN 322	Organizational Behaviour 2	3.0	36
ADMN 302	Problem Solving and Decision Making	3.0	36
BSMT 100	Maintenance and Control	3.0	36
BSMT 101	Safety and Sanitation	3.0	36
OHCE 301	Fire Protection 1: Fire Prevention	3.0	36
OPMT 191	Purchasing	3.0	36
OPMT 192	Inventory Planning and Control	3.0	36

HEALTH CARE MANAGEMENT CERTIFICATE PROGRAM LEVEL 2

This program is designed for middle managers in health care agencies and in long term care agencies. The program builds upon the Health Care Management Certificate Program (Level 1) by requiring participants to complete an additional 252 hours (21 credits) of course work.

Level 2 program objectives include increasing the breadth and depth of knowledge by studying new subject material as well as advanced subjects, and solving problems using theory and skills gained in previous mandatory courses.

To qualify for the Level 2 Certificate, participants must complete additional mandatory core courses and electives. Electives are chosen in consultation with the program co-ordinator and are selected from the same elective streams as listed for the Level 1 program.

Mandatory Courses

		Credit	Hrs
HMGT 701	Information Systems in Health Care 1	1.5	18
HMGT 702	Health Care Law	1.5	18
HMGT 703	Financial Administration for Health Care Managers	1.5	18
HMGT 751	Information Systems in Health Care 2	1.5	18
HMGT 752	Health Labor Relations 2	1.5	18
HMGT 753	Application of Theory to Selected Health Problems	1.5	18

HEALTH CARE MANAGEMENT PROFESSIONAL DEVELOPMENT

Throughout the year, courses are featured for graduates from the Health Care Management Certificate Program, the Canadian Hospital Association's correspondence courses in management, other management courses, and for those people who simply wish more information about a particular health care topic. Included in these are:

		Credit	Hrs
HMGT 914	Performance Appraisal for Health Care Supervisors	1.5	18
HMGT 918	Management Information Systems for Long Term Care Administrators	1.0	12
HMGT 920	Employment Interviewing in Health Care Organizations	0.5	6
HMGT 922	Administrative Cost Control for Long Term Care Administrators	0.5	6
HMGT 923	Food Cost Control	1.0	12

These courses may be offered in any community in B.C. Fees will vary depending on the local arrangements and the location. For further information contact Health Part-time Studies at the Burnaby Campus.

CERTIFICATE PROGRAM IN OCCUPATIONAL HEALTH AND SAFETY

Program Head: Lars Larsson, C.R.S.P.

This program is designed for people employed in, or interested in, the safety of persons and property in industry. Credits accrued in this certificate program may be applied to the Diploma program. Persons not wishing to take the entire program may register for individual courses.

Course selections must be approved in writing by the Program Head in Occupational Health and Safety.

Mandatory Courses

		Credit
OHCE 101	Accident Prevention 1:Job Safety Analysis	3.0
OHCE 102	Accident Prevention 2:Employee Motivation	3.0
OHCE 103	Accident Prevention 3: Safety Design and Equipment	3.0
OHCE 104	Accident Prevention 4: Industrial Applications	3.0
OHCE 201	Industrial Health and Safety 1: Legislation	3.0
OHCE 202	Industrial Health and Safety 2: Policy Application	3.0
OHCE 203	Industrial Health and Safety 3: Loss Control and Auditing	3.0
OHCE 204	Industrial Health and Safety 4: *Hazardous Materials*	3.0
OHCE 301	Fire Protection 1: Fire Prevention	3.0
OHCE 302	Fire Protection 2: Gases and Flammable Materials	3.0
OHCE 401	Industrial Hygiene 1: Toxicology	3.0
OHCE 402	Industrial Hygiene 2: Noise	3.0
OHCE 403	Industrial Hygiene 3: Radiation Protection	3.0

Suggested Electives

ADMN 124	Supervisory Skills	3.0
ADMN 128	Occupational Safety and Health (B.C.S.C.)	3.0
ADMN 222	Organizational Behavior 1	3.0
ADMN 332	Labor Relations 1	4.0
BSMT 101	Safety and Sanitation	3.0
COMM 160	Business and Technical Communication	3.0
COMM 183	Technical Reports	3.0
MECH 140	Drafting Fundamentals	3.0
MECH 432	Automatic Sprinkler Systems Design 1	3.0
MECH 436	Automatic Sprinkler Systems Design 2	3.0
MKTG 323	Public Speaking and Oral Communication 1	3.0
OPMT 294	Physical Material Handling: Control and Use of Pesticides	1.5

BIOMEDICAL ENGINEERING

Program Head: Dave Chiu, B.Eng.,M.Sc.,Ph.D.,P.Eng.

Biomedical Engineering technologists maintain and repair electronic equipment used in medicine and biology. There is a need for individuals who have an understanding of this rapidly changing field. Courses are designed to provide specific skills for immediate job application. Advanced Diploma courses are being prepared in this area.

		Credit
ADNU 670	Patient Care Technology	2.0

ENVIRONMENTAL HEALTH

Program Head: Brent Price,C.P.H.I.(C)

Environmental Health Technologists often face new challenges. Part-time Studies courses are designed to assist these professionals to become familiar with key issues in these new areas. The first Advanced Diploma courses are now available in this technology.

		Credit
ADEH 601	Hydrogeology	3.0
ADEH 604	Epidemiology and Biostatistics	3.0
EHCE 901	Basic Sound Measurement	-
EHCE 902	Basic Pest Control Within Buildings	-

HEALTH INFORMATION

Program Head: Elaine Gibson,CCRHA(C).M.Ed.

This program offers courses for both upgrading and advancement. Evening courses allow people to begin their health record technician studies while remaining employed. Courses for the completion of the second year of the health records administration program are currently under development. Advanced Diploma courses are also being planned.

		Credit
HICE 501	Medical Terminology I	3.0

PROSTHETICS AND ORTHOTICS

Program Head: Bill McGuiness, M.A.,C.P.O.

Short courses and workshops in Prosthetics and Orthotics are offered as needs are identified. To be placed on the mailing list contact Health Part-time Studies.

POCE 901	Lower Limb Orthotics
POCE 902	Upper Limb Orthotics
POCE 903	IPOS Trans Femoral Prosthetic Systems
POCE 904	Prosthetics, Orthotics and the Amputee Part 1: The Lower Limb
POCE 905	Rehabilitation of the Amputee
POCE 906	Prosthetic Feet

MEDICAL LABORATORY SCIENCES AND MEDICAL IMAGING

MEDICAL LABORATORY

Program Head:Karen Nicolson, B.Sc.,A.R.T.(Clin.Micro.)

Medical Laboratory offers courses at many levels. The refresher courses prepare students for re-entering the work force, while the advanced ones prepare them for the Advanced Registered Technologist examination and/or the Advanced Diploma in Health Sciences.

		Credit
MLCE 602	Normal Histology and Microanatomy for Medical Laboratory Technologists Part 1	3.0
MLCE 604	Clinical Chemistry	1.5
MLCE 605	Hematology	1.5
MLCE 606	Histopathology	1.5
MLCE 607	Immunohematology	1.5
MLCE 608	Clinical Microbiology	1.5
MLCE 610	Advanced Hematology 1 (Red Cell)	3.0
MLCE 611	Advanced Hematology 2	3.0
MLCE 622	Advanced Clinical Parasitology	1.5

BASIC HEALTH SCIENCES

Program Head: Dave Martin,B.Sc (Hons),M.S.R.

Courses are offered in the basic health sciences to help health professionals upgrade and advance their knowledge in the biological and behavioral sciences.

		Credit
BHCE 601	Cross Sectional Anatomy	3.0
BHCE 914	Anatomy and Physiology Review	3.0
BHCE 915	Pathophysiology	3.0

MEDICAL RADIOGRAPHY

Program Head: Ann McMillen, R.T., Dipl Hlth Care Mgmt., M.Ed.

Medical Radiography offers advanced level courses in a variety of technical subjects. While most of the courses are designed for Advanced Certification, they can be used to update knowledge.

		Credit
BHCE 601	Cross Sectional Anatomy (approved by CAMRT for Advanced Certificate 0.5 credit)	3.0
MRCE 611	Computed Tomography (Advanced Certification Credit 1.0)	3.0
MRCE 612	Technological Advances in X-ray Imaging	3.0
MRCE 902	Refresher Program for Medical Radiography Technologists	0.0
MRCE 912	Radiation Biology for Medical Radiography Technologists (Advanced Certification Credit)	3.0

NURSING

Courses are offered for graduates in General Nursing to update knowledge and skills. Advanced level (post-basic) courses are available in Critical Care Nursing, Operating Room Nursing, Emergency Nursing, Occupational Health Nursing, Neonatal Nursing, Obstetrical Nursing, Corrections Nursing, and Rehabilitation Nursing. Clinical application courses may be full-time study practicums or preceptorships.

CERTIFICATE OF CREDIT IN NURSING

Program Coordinator: Moira Barnetson, R.N., S.C.M., R.F.N.

This is a program of guided learning courses offering tutorial assistance in English, behavioral sciences and biological sciences, to meet the requirements of the BCIT General Nursing curriculum. More information is available in the Certificate of Credit in Nursing brochure.

		Credit
CTCR 101	Anatomy and Physiology	3.5
CTCR 102	Writing for Nurses	3.5
CTCR 103	Personal Fitness Management	2.0
CTCR 104	Physiology	3.5
CTCR 105	Human Development 1	3.5
CTCR 106	Human Development 2	1.5
CTCR 107	Sociology	1.5
CTCR 108	Microbiology	1.0
CTCR 109	Immunology	1.0

REFRESHER COURSES

Program Coordinator: Moira Barnetson, R.N., S.C.M., R.F.N.

Nurses who have not practiced in recent years who wish to upgrade their knowledge and skills may undertake the intensive refresher program with a supervised practicum.

NUCE 901	Refresher Course for Graduate Nurses**

QUALIFYING COURSES

Program Coordinator: Moira Barnetson, R.N., S.C.M., R.F.N.

These courses are offered to assist graduate nurses to complete their educational qualifications for eligibility to become registered nurses in British Columbia.

NUCE 904	Obstetrical Nursing Qualifying: Theory**
NUCE 905	Obstetrical Nursing Qualifying: Clinical**
NUCE 906	Psychiatric Nursing Qualifying: Theory**
NUCE 907	Psychiatric Nursing Qualifying: Clinical**

**These courses require approval by the department before registration. Application forms are available by contacting Health Part-time Studies BCIT, Burnaby.

ADVANCED NURSING SPECIALTIES

Advanced courses are designed to provide post diploma qualifications in specialty areas for registered nurses. Some of these courses are available in a guided learning mode, ie. via modules supported with teletutoring and teleconferencing which enable participants to study part-time and complete these courses mainly in their own communities. These courses lead to a specialty certificate and may be applied toward an Advanced Diploma in Health Science. More detailed information is provided in the Advanced Diploma section and in the Advanced Diploma calendar.

GENERIC COURSES

		Credit
ADNU 601	Physiological Aspects of Patient Care 1	4.0
ADNU 602	Physiological Aspects of Patient Care 2	2.0
ADNU 603	Pathophysiology	5.0
ADNU 604	Pathophysiology for Critical Care Nursing	5.0
ADNU 607	Pathophysiology for Emergency Nursing	5.0
ADNU 620	Psychological Aspects of Patient Care 1	3.0
ADNU 621	Psychological Aspects of Patient Care 2	3.0
ADNU 623	Application of Psychological Aspects of Patient Care	4.0
ADNU 624	Psychological Aspects of Rehabilitation Nursing	4.0
ADNU 630	Interpersonal Skills	3.0
ADNU 631	Individual Counselling Skills	3.0
ADNU 632	Group Counselling Skills	3.0
ADNU 640	Physical Status Assessment	3.0
ADNU 641	Mental Status Assessment	3.0
ADNU 650	Ethics in Health Sciences	2.0
ADNU 651	Multicultural Nursing	3.0
ADNU 660	Legal Issues in Nursing	3.0
ADNU 670	Patient Care Technology	2.0

CRITICAL CARE NURSING

Specialty Coordinator: Colleen Varcoe, R.N., B.Sc.N., M.Ed.

		Credit
ADNU 604	Pathophysiology for Critical Care Nursing	5.0
ADNS 630	Critical Care Nursing: Theory	5.0
ADNS 631	Critical Care Nursing: Theory, UBC/VVI Level 1 Grad.	2.0
ADNS 632	Critical Care Nursing: Clinical Practicum 1	7.0
ADNS 633	Critical Care Nursing: Advanced Theory	5.0
ADNS 634	Critical Care Nursing: Clinical Practicum 2	7.0
ADNS 636	Critical Care Nursing: Preceptorship	5.0

CORRECTIONS NURSING

Specialty Coordinator: Moira Barnetson, R.N., S.C.M., R.F.N.

		Credit
ADNU 640	Physical Assessment	3.0
ADNU 641	Mental Status Assessment	3.0
ADNS 670	Introduction to the Justice System	1.0
ADNS 671	Clinical Assessment in Corrections Nursing	3.0
ADNS 672	Correctional Behaviour Patterns and Crisis Management	5.0
ADNS 673	Health Education in a Correctional Setting	2.0
ADNS 674	Infection Control in a Correctional Setting	2.0
ADNS 675	Clinical Application Course	6.0

EMERGENCY NURSING

Specialty Coordinator: Caroline Howe, R.N.

		Credit
ADNU 607	Pathophysiology for Emergency Nursing	5.0
ADNS 610	Emergency Care Nursing: Theory	5.0
ADNS 611	Emergency Care Nursing: Clinical Practicum	7.0
ADNS 612	Emergency Care Nursing: Theory	3.0
ADNS 613	Emergency Care Nursing: Advanced Clinical Practicum	7.0
ADNS 614	Emergency Care Nursing: Preceptorship	5.0
ADNS 615	Trauma Management For Nurses	2.0
ADNU 670	Patient Care Technology	2.0

NEONATAL NURSING

Specialty Coordinator: Seonag Lennie, R.N., B.S.N.

		Credit
ADNS 680	Introduction to Neonatal Nursing: Theory	5.0
ADNS 681	Introduction to Neonatal Nursing: Clinical	3.0
ADNU 630	Interpersonal Skills	3.0
ADNS 682	Care of the High Risk Neonate: Theory	5.0
ADNS 683	Care of the High Risk Neonate: Clinical	5.0
ADNU 670	Patient Care Technology	2.0
ADNU 650	Ethics in Health Sciences	2.0
ADNS 684	The Critically Ill Neonate: Theory	3.0
ADNS 685	The Critically Ill Neonate: Clinical	5.0

OBSTETRIC NURSING

Specialty Coordinator: Reina Gulicker, R.N., B.S.N.

		Credit
ADNS 644	Low Risk Obstetrical Nursing	6.0
ADNS 645	Obstetrical Clinical Preceptorship 1	4.0
ADNS 646	Moderate and High Risk Obstetrical Nursing	6.0
ADNS 647	Obstetrical Clinical Preceptorship 2	8.0
ADNS 648	High Risk Obstetrical Nursing	6.0
ADNS 649	Obstetrical Clinical Practicum	6.0

OCCUPATIONAL HEALTH NURSING

Specialty Coordinator: Stephanie Wilson, R.N., B.N., C.C.O.H.N.

Phase 1

		Credit
HMGT 611	Organizational Behaviour for Occupational Health Nurses	3.0
ADNS 660	Introduction to Occupational Health Nursing	3.0
ADNS 661	Health Assessment: Clinical	4.0
ADNS 669	Health Assessment for Occupational Health Nurses	3.0

Phase 2

ADNS 662	Fundamentals of Industrial Hygiene	3.0
ANDS 663	Toxicology	3.0
ADNS 664	Health Surveillance: Theory	3.0
ADNS 665	Health Maintenance: Clinical	4.0

Phase 3

ADNS 666	Advanced Concepts in Occupational Health Nursing	6.0
ADNS 667	Occupational Health Nursing: Preceptorship*	4.0

*Note: The nurse will require successful completion of Industrial First Aid prior to the second clinical course and the preceptorship.

OPERATING ROOM NURSING

Specialty Coordinator: Marnie Simon, R.N.

		Credit
ADNS 620	Operating Room Nursing: Introduction	7.5
ADNS 621	Operating Room Nursing: Clinical Practical	18.0
ADNS 623	Orthopedic Operating Room Nursing: Introduction	6.5
ADNS 624	Orthopedic Operating Room Nursing: Advanced	4.5
ADNS 626	Vascular Operating Room Nursing	5.0
ADNS 627	Neurosurgical Operating Room Nursing	7.0
ADNS 628	Thoracic Operating Room Nursing	6.0

REHABILITATION NURSING

Specialty Coordinator: Moira Barnetson, R.N., S.C.M., R.F.N.

Phase 1

		Credit
ADNS 690	Rehabilitation Nursing 1	4.0
ADNU 640	Physical Status Assessment	3.0

Phase 2

ADNU 624	Psychological Aspects of Rehabilitation Nursing	4.0
ADNS 691	Rehabilitation Nursing 2	4.0
ADNU 641	Mental Status Assessment	3.0
ADNS 692	Rehabilitation Nursing 3 (Clinical)	6.0

Phase 3

ADNS 693	Rehabilitation Nursing 4 (Preceptorship)	8.0
ADNU 632	Group Counselling Skills	3.0

ADVANCED DIPLOMA IN HEALTH SCIENCES

Program Requirements

The Advanced Diploma in Health Sciences is designed to provide practicing technologists and nurses with the advanced knowledge, skills and attitudes necessary for further professional competence, advanced technological or clinical roles, management roles and for individual growth.

The Advanced Diploma has six components. The student will be required to successfully complete a minimum number of credits in each component, plus elective credits to a total of 45 credits. For more detailed information, request a copy of the Advanced Diploma calendar.

	Required Credits (minimum)	Elective Credits (maximum)
Health Science Specialty	24	12
Management 3	9	
Health Care Systems	3	3
Educational Skills	0	9
Practical Research	3	3
General Knowledge	0	3
Totals Required	33	12

HEALTH CARE SYSTEMS

		Credit
HCSY 610	Health Care Systems	1.5
HCSY 620	Health Care Systems 2	1.5

EDUCATIONAL SKILLS

EDUC 601	Human Learning	2.0
EDUC 625	Using Audiovisuals in Education	1.0

RESEARCH

RESH 601	Understanding Research in Health Sciences	3.0
RESH 602	Preparing Health Science Research	3.0

MANAGEMENT

HMGT 600	Health Care Supervisory Skills	3.0

(See Health Care Management section for other listings)

MEDICAL-SURGICAL SUPPLY CONSULTANTS CERTIFICATE PROGRAM

Designed to provide knowledge of specific medical-surgical areas to those involved in the sale and purchase of equipment and supplies. Applicants register in the full program and are expected to complete the five courses within a nine-month period.

		Credit
MSSC 101	Human Anatomy and Physiology	3.5
MSSC 102	Medical Terminology	1.5
MSSC 103	Medical-Surgical Procedures	3.0
MSSC 104	General Instrumentation	1.5
MSSC 105	Biomedical Electrical Safety	1.5

Course Descriptions

ADEH 601 Hydrogeology — Examines the nature and characteristics of ground water. Topics include ground water movement, velocity of movement, direction of flow plus variation in ground water composition through chemical interactions and contamination related to ground water exploitation. **3 credits**

ADEH 602 Epidemiology and Biostatistics — Enables the student to apply epidemiological principles to assess the distribution and causes of disease in the population and to use biostatistical methods to critically evaluate data and study conclusions. **3 credits**

ADNS 610 Emergency Care Nursing: Theory — Presents basic theory pertinent to emergency nursing care. Integrates theory of disease processes and injury commonly seen in emergency caresettings with appropriate assessment parameters, priorities of care, therapeutic interventions and specific skills, such as dysrhythmia interpretation and ABG analysis. Prerequisite: ADNU 603 or 607. **5 credits**

ADNS 611 Emergency Care Nursing: Clinical Practicum — This 4 week clinical course is designed to permit application of ADNS 610 theory. Laboratories and seminars are included to augment learning from theory modules, to facilitate practice of specific skills, such as airway management, interviewing, assessment and intravenous therapy and to allow students opportunity to discuss relevant issues with peers. Clinical experiences will be obtained through 3 weeks of clinical practice under the supervision of a clinical instructor in an Emergency Department. A.C.L.S. Certification Course will also be taken during this period. Prerequisite: ADNS 610. ADNU 670 may be taken concurrently. **7 credits**

ADNS 612 Emergency Care Nursing Theory — Presents more advanced and multi-dimensional concepts and therapeutic measures such as triage, psychiatric disorders, obstetrical emergencies, burns, ventilator management and hemodynamic pharmacology. Prerequisite: ADNS 611 and ADNU 670. ADNS 615 or ADNS 613 may be taken concurrently. **3 credits**

ADNS 613 Emergency Care Nursing: Advanced Clinical Practicum — Integrates previously learned advanced concepts and therapeutic measures into clinical practice. Emphasizes establishing priorities and efficiently organizing nursing care for patients with varying types and complexities of illness and injury. The nurses will apply and integrate knowledge and skills through 4 weeks of clinical practice under the supervision of a clinical instructor in Tertiary/Regional Emergency Departments. Laboratories on triage, splinting and wound care will also be included in this clinical component. Prerequisite/corequisite: ADNS 612 and ADNS 615. **7 credits**

ADNS 614 Emergency Care Nursing: Preceptorship — Focuses on integration and refinement of previously learned theory and skills through a 3 week clinical preceptorship. Emphasis in this course will be on development towards independence as an emergency care nurse. Once the preceptor course objectives have been met, optional learning opportunities, such as experiences in burn units, C.C.U.'s, I.C.U.'s, pediatrics or Emergency Health Service may be arranged. Prerequisite: ADNS 613. **5 credits**

ADNS 615 Trauma Management for Nurses — Focuses on the etiology, pathophysiology, assessment and nursing management of trauma as seen in emergency care settings. Examines trauma related to each of the body systems (e.g., craniocerebral trauma, cardiothoracic trauma, etc.) and culminates in an integrated approach to the assessment and management of multiple trauma.

Applications of theory from the modules will occur during a 1 day laboratory through demonstrations and simulated practice in case study scenarios. Prerequisite: Sound knowledge base in basic pathophysiology, airway management, intravenous therapy, etc. Experience working in either an emergency or critical care setting preferred. **2 credits**

ADNS 620 Operating Room Nursing: Introduction — Introduces theory and principles of perioperative nursing. On completion of the independent learning modules, the student attends 6 days of tutorial/skills laboratories. Prerequisite: Registered Nurse with one year of recent acute care experience. **7.5 credits**

ADNS 621 Operating Room Nursing: Clinical Practice — The theory portion of this course will be presented in modular form. Two weeks of preliminary independent study will prepare the student for 10 weeks of clinical instruction. An introductory classroom day will be provided during which the anatomy and physiology exam is held. Another classroom day will be conducted during week 7 of the course during which time the midterm exam will be written. The final exam will be written and course evaluation given during week 12. Clinical laboratories will be conducted by the clinical instructor to reinforce the clinical practice and independent study. **18 credits**

ADNS 623 Orthopedic Operating Room Nursing: Introduction — This advanced course offers the beginning level or experienced operating room nurse a comprehensive introduction to the surgical techniques, instrumentation and procedures used in orthopedic surgery. Prerequisite: ADNS 620 and 621 or equivalent, or one year recent Operating Room experience. **6.5 credits**

ADNS 624 Orthopedic Operating Room Nursing: Advanced — This shorter orthopedic course has been designed to give experienced orthopedic surgical nurses information of the advanced techniques in orthopedic surgery that were not presented in ADNS 623. Prerequisite: ADNS 620 and 621 or equivalent plus one year of current operating room nursing experience, or two years current operating room experience. **4.5 credits**

ADNS 626 Vascular Operating Room Nursing — Comprehensive theoretical information and clinical experience is provided to assist the experienced operating room nurse to become proficient in the surgical specialty of vascular surgery. Prerequisite: ADNS 620 and 621 or equivalent plus one year recent experience, or two years recent experience. **5 credits**

ADNS 627 Neurosurgical Operating Room Nursing — Comprehensive theoretical information and clinical experience is provided to assist the experienced operating room nurse to become proficient in the surgical specialty of neurosurgery. Prerequisite: ADNS 620 and 621 or equivalent plus one year recent experience, or two years recent experience. **7 credits**

ADNS 628 Thoracic Operating Room Nursing — Comprehensive theoretical information and clinical experience is provided to assist the experienced operating room nurse to become proficient in the surgical specialty of thoracic surgery. Prerequisite: ADNS 620 and 621 or equivalent plus 1 year recent experience, or 2 years recent experience. **6 credits**

ADNS 630 Critical Care Nursing: Theory — Presents basic theory pertinent to critical care. Integration of the nursing care problems commonly encountered in critical care units (e.g., myocardial infarction, respiratory failure, increased intracranial pressure and renal failure) with specific skills such as dysrhythmia interpretation, ABG analysis, ventilator care and hemodynamic monitoring. Prerequisite: ADNU 603 or ADNU 604. **5 credits**

ADNS 631 Critical Care Nursing: Theory — Adapted from ADNS 630 for graduates of the UBC/VCC Level 1 Critical Care Nursing Program. **2 credits**

ADNS 632 Critical Care Nursing: Clinical Practicum 1 — A 4 week clinical course designed to permit application of ADNS 630 theory. Includes skill practice in airway management, hemodynamic monitoring and ventilator management in a lab setting. Also includes 3 weeks of supervised clinical experience and an A.C.L.S. certification course. Seminars are held to integrate theory related to crisis intervention, communication and family theory. Prerequisite: ADNS 630, B.C.L.S. Level C. ADNU 670 may be taken concurrently. **7 credits**

ADNS 633 Critical Care Nursing: Advanced Theory — Introduces more complex health problems such as AIDS, shock, multiple trauma and DIC. Includes advanced therapeutic measures such as ICP monitoring, advanced ventilator care and advanced cardiopulmonary monitoring. Prerequisite: ADNS 630 and ADNU 670. **5 credits**

ADNS 634 Critical Care Nursing: Clinical Practicum 2 — Advanced skills such as ICP monitoring, dual chamber pacemakers and cardiac output measurement will be practiced in a laboratory setting with supervised clinical practice in a tertiary care setting. Develops organization and efficiency in management of critically ill patients and crisis situations. Seminars cover change theory, decision making, legal/ethical issues and health team collaboration and referral. Prerequisite: ADNS 632, ADNS 633, current ACLS certification. **7 credits**

ADNS 636 Critical Care Nursing: Preceptorship — Provides an opportunity for the critical care nurse to focus on the study of a subspecialty or area of interest while integrating and refining previous knowledge and skills. Students select a "stream" (e.g., cardiovascular surgery, post anesthetic recovery, trauma nursing or general studies) in which independent study, observational experiences, and a clinical preceptorship are arranged. Independent study plus 3 weeks of full-time study. Prerequisite: ADNS 633, ADNS 634, current employer reference. **5 credits**

ADNS 640 Concepts in Nursing the Childbearing Family Part 1 — Current concepts in Obstetrical Nursing designed for nurses who are employed in non-departmentalized hospitals and have obstetric patients as part of their practice. A guided learning course. **3 credits**

ADNS 641 Concepts in Nursing the Childbearing Family Part 2 — A continuation of ADNS 640. **3 credits**

ADNS 644 Low Risk Obstetrical Nursing — Covers knowledge required to provide nursing care to women with low risk pregnancies and their neonates who are in obstetrical units of community hospitals. The focus is on the antepartum, labor and delivery and postpartum periods. Includes the use of selected communication skills in interaction with childbearing families of varied cultural backgrounds and a discussion on legal responsibilities in the obstetrical setting. **6 credits**

ADNS 645 Obstetrical Clinical Preceptorship 1 — Full-time clinical experience (approximately 3 weeks) with a preceptor in a labor and delivery unit of a community/regional hospital. The nurse will have the opportunity to apply the knowledge and develop the skills required to provide nursing care to women with low risk pregnancies and their neonates. Prerequisite: ADNS 644. **4 credits**

ADNS 646 Moderate to High Risk Obstetrical Nursing — Introduces knowledge required to provide nursing care to women with moderate-to-high risk pregnancies and their neonates.

Focuses on antepartum, labor and delivery and postpartum periods. Covers critical decision making skills and theories related to families, cultures, grieving and loss. Includes recognition of high risk neonates. Prerequisite: ADNS 645. **6 credits**

ADNS 647 Obstetrical Clinical Preceptorship 2 — A 6 week, full-time clinical experience with a preceptor on an obstetrical unit of a regional hospital. The nurse will have the opportunity to develop critical decision-making skills and apply theories of families, cultures, grieving and loss. Includes 4 weeks on a labor and delivery unit and 2 weeks on a postpartum unit. Prerequisite: ADNS 646. **8 credits**

ADNS 648 High Risk Obstetrical Nursing — Focuses on the knowledge required to care for women with high risk pregnancies and/or pre-existing medical conditions. Covers obstetrical emergencies and legal/ethical dilemmas related to unanticipated events of child-bearing. Prerequisite: ADNS 647. **6 credits**

ADNS 649 Obstetrical Clinical Practicum — A 4 week, full-time supervised clinical experience in a tertiary care hospital. The nurse will have the opportunity to apply knowledge and develop skills required to provide nursing care to women with high risk pregnancies and medical complications. The experience includes antepartum, labor and delivery, postpartum and neonatal care in the observational nursery. Prerequisite: ADNS 648. **6 credits**

ADNS 660 Introduction to Occupational Health Nursing — Presents the principles and concepts of Occupational Health Nursing. Pertinent legislation and the process of group teaching are emphasized. **3 credits**

ADNS 661 Health Assessment: Clinical — Following independent study of the theory for special assessment procedures, a 3 week, full-time session provides laboratory and supervised clinical practice in health assessment skills. A variety of OH settings will be visited. Prerequisite: HMGT 611, ADNS 660, ADNS 669 and Industrial First Aid Certificate. (Effective January 1989.). **4 credits**

ADNS 662 Fundamentals of Industrial Hygiene — Presents theory related to hazards found in various work settings. Recognition and control measures for physical, chemical, ergonomic and biological stressors are addressed. Prerequisite: ADNS 661 or permission of the Coordinator. **3 credits**

ADNS 663 Toxicology — Presents the principles of toxicology and epidemiology as they relate to the workplace. Substances such as pesticides, solvents, metals, gases and particulates are discussed. Reproductive and carcinogenic hazards are addressed. Prerequisite: ADNS 662. **3 credits**

***ADNS 664 Health Surveillance** — Presents theory related to monitoring employees in specific work environments to detect any associated change in health status. Prerequisite: ADNS 662. **3 credits**

***ADNS 665 Health Maintenance: Clinical** — A 3 week full-time experience incorporating lab and practicum. Emphasis is on counselling skills, with some environmental monitoring. Prerequisite: ADNS 664 and current Industrial First Aid Certificate. **4 credits**

***ADNS 666 Advanced Concepts in Occupational Health Nursing** — Builds on previous courses with theory required to function as the Occupational Health Nurse in charge of a service. Emphasis is on the management of a service. Includes various special emphasis programs. Prerequisite: ADNS 665 or permission of the instructor. **6 credits**

***ADNS 667 Occupational Health Nursing Preceptorship** — Clinical experience under the guidance of a preceptor in an Occupational Health setting. The student works toward independent practice by integrating and refining previous theory and skills. Three weeks full-time study. Prerequisite: ADNS 666 and current Industrial First Aid Certificate. **4 credits**

***ADNS 669 Health Assessment for Occupational Health Nurses** — The theoretical basis for assessing the health of individual employees is presented. Theory for special assessment procedures is included. Prerequisite: ADNS 660 or permission of coordinator. **3 credits**

ADNS 670 Introduction to the Justice System — Presents an overview of the Justice System's goals, legislation and security procedures. **1 credit**

ADNS 671 Clinical Assessment in Corrections Nursing — Provides practice in health screening according to guidelines used in the corrections service. Includes laboratory practice and clinical placement. Prerequisite: ADNU 640, ADNU 641, ADNS 670 and CPR Certificate. **3 credits**

ADNS 672 Correctional Behaviour Patterns and Management — Presents pathological behaviour patterns continuously occurring in correctional settings and discusses current theory and practice for the management of those behaviors. **6 credits**

ADNS 673 Health Education in a Correctional Setting — Focuses on teaching and learning skills for individuals who are not motivated to change their behaviour using the usual approaches. **2 credits**

***ADNS 674 Infection Control** — Covers the management of infectious diseases in a correctional setting. Includes immunization, common communicable diseases, T.B. control, sexually transmitted diseases and general principles. **2 credits**

***ADNS 675 Clinical Application** — Three weeks supervised practicum in a correctional setting, designed to consolidate and apply theory learned in previous courses in the program. **6 credits**

ADNS 680 Introduction to Neonatal Nursing: Theory — Presents the basic theory required to begin caring for infants in a special care nursery. Emphasis is on maternal influences on the fetus and newborn, a few common neonatal disorders and the basic nursing skills required to begin caring for infants in a Level II nursery. **5 credits**

ADNS 681 Introduction to Neonatal Nursing: Clinical — Full-time clinical experience (approximately 2 weeks) with an instructor. Students will have some choice as to the location of this clinical experience. Emphasis will be placed on assessment skills and basic care of the ill newborn. Prerequisite: ADNS 680 (minimum 75%) and recent acute care hospital experience. **3 credits**

ADNS 682 Care of the High Risk Neonate: Theory — Builds on theory covered in ADNS 680. Emphasis is placed on pathophysiology of common neonatal disorders, the nursing care of high-risk newborns, and care of the family with an infant in a special care nursery. Prerequisite: ADNS 680. **5 credits**

ADNS 683 Care of the High Risk Neonate: Clinical — A full-time clinical course (approximately 3 weeks) with a preceptor. This course will build on clinical skills practiced in ADNS 681 but will emphasize the care of high risk newborns. Use of a variety of equipment, including mechanical ventilators will be included. Prerequisite: ADNS 681 and 682 (minimum 75%). Corequisite: ADNU 670. **5 credits**

ADNS 684 The Critically Ill Neonate: Theory — Presents the theory required to care for critically ill newborns. Emphasis will be on the care of infants with multisystem failure and the pathophysiology of life-threatening disorders. Prerequisite: ADNS 682. Corequisite: ADNU 650. **3 credits**

ADNS 685 The Critically Ill Neonate: Clinical — A full-time supervised clinical course (approx. 3 weeks). Emphasis is on complete nursing care of critically ill newborns. Prerequisite: ADNS 683. Corequisite: ADNS 684. **5 credits**

ADNS 690 Rehabilitation Nursing 1 — Introduction to selected theories and concepts. Major focus is on the physiological aspects of rehabilitation nursing. Includes head injury, stroke, spinal cord, arthritis, multiple sclerosis and amputation. **4 credits**

ADNS 691 Rehabilitation Nursing 2 — This course builds on the concepts studied in ADNU 624 and applies them to the rehabilitation setting. It directs the nurse to learn the knowledge, skills and attitudes necessary to meet the psychosocial needs of individuals with a disability. Prerequisite: ADNS 690 and ADNU 624. **4 credits**

ADNS 692 Rehabilitation Nursing 3 — This 4 week course incorporates laboratory and supervised clinical experience to enable the nurse to integrate and apply previous learning while assisting patients in a rehabilitation setting to meet both their physiological and psychosocial needs. Prerequisite: ADNS 690, ADNS 691, ADNU 624 and ADNU 641. **4 credits**

***ADNS 693 Rehabilitation Nursing 4** — This course, which combines guided learning with a 6 week clinical preceptorship, provides the nurse with an opportunity to apply rehabilitation nursing knowledge, skills and attitudes at an advanced level. Prerequisite: ADNS 692. **8 credits**

ADNU 601 Physiological Aspects of Patient Care Part 1 — Builds on basic physiology and assists students to understand the mechanisms the body uses to adapt to stressors and to predict common problems resulting from alterations in body functions. **4 credits**

ADNU 602 Physiological Aspects of Patient Care Part 2 — A continuation of ADNU 601. A guided learning course. Prerequisite: ADNU 601. **2 credits**

ADNU 603 Pathophysiology — Reviews cellular organization and response to disease. Organized by systems covering cardiovascular, respiratory, neurological, endocrine, renal and gastrointestinal physiology and diseases. **5 credits**

ADNU 604 Pathophysiology for Critical Care Nursing — Reviews cellular organization and response to disease. Organized by systems covering cardiovascular, respiratory, neurological, endocrine, renal and gastrointestinal physiology and diseases. **5 credits**

ADNU 607 Pathophysiology for Emergency Nursing — Reviews cellular organization and response to disease. Organized by systems covering cardiovascular, respiratory, neurological, endocrine, renal and gastrointestinal physiology and diseases. **5 credits**

ADNU 620 Psychological Aspects of Patient Care 1 — Covers assessment of dysfunctional behaviour using a case study approach. **3 credits**

ADNU 621 Psychological Aspects of Patient Care 2 — A continuation of ADNU 620. Prerequisite: ADNU 620 **3 credits**

ADNU 623 Application of Psychological Aspects of Patient Care — A guided learning course which deals with interventions for the dysfunctional behaviour described in ADNU 620/621. Prerequisites: ADNU 620 and 621. **4 credits**

ADNU 624 Psychological Aspects of Rehabilitation Nursing — A modification of ADNU 620/621 for nurses in Rehabilitation Nursing. **4 credits**

ADNU 630 Interpersonal Skills — Provides training which will enable the learner to respond with empathy, warmth and respect to patients. The course is based on a systematic human relations training model. **3 credits**

ADNU 631 Individual Counselling Skills — Introduces health care practitioners to the application of interpersonal skills for the interviewing and counselling of individuals. Prerequisite: ADNU 630. **3 credits**

ADNU 632 Group Counselling Skills — Designed to introduce health care practitioners to the application of interpersonal skills to working with groups of clients. Uses a person centered approach as developed by Rogers, Carkhuff and Egan as a theoretical model. Based on the hypothesis that when a psychological climate of safety and acceptance is created in a group, group members are able to use their own resources constructively. Prerequisite: ADNU 630. **3 credits**

ADNU 640 Physical Status Assessment — For nurses who provide care to adult patients where they are expected to assess the client's physical status in cooperation with a physician. This is a practical "hands on" course and students will need to practice assessment skills with peers or clients. **3 credits**

ADNU 641 Mental Status Assessment — For nurses who provide care to psychiatric clients in various settings. Focuses on skills for assessing the client's mental status. **3 credits**

ADNU 650 Ethics in Health Sciences — Designed to provide the practicing health care professional with an introduction to the study of ethics in health sciences. It will not provide answers to specific ethical dilemmas but will help the student to acquire the tools needed for ethical deliberation and action. **2 credits**

ADNU 651 Multicultural Nursing — Introduces the importance of conceptualizing the inherent worth of different cultural values and lifestyles. Applies this knowledge to a health care setting. **3 credits**

ADNU 660 Legal Issues in Nursing — Addresses legal concerns arising in consent, negligence and nursing records, and presents an overview of Canadian law and legal principles applicable to nursing practice and administration. Appropriate for nurses employed in hospitals and community settings. **3 credits**

ADNU 670 Patient Care Technology — Medical instrumentation for nurses. Covers the most common medical equipment found in critical care areas. Teaches the safe and effective use of this equipment. **2 credits**

BHCE 601 Cross Sectional Anatomy — For technologists who require knowledge of cross sectional anatomy of the chest, abdomen and pelvis. Content includes body planes, cavities and their divisions, sectional geometry and three-dimensional anatomy. Anatomic features and relationships of functional and pathological significance will be emphasized. CAMRT AC Credit 0.5. **3 credits**

BHCE 914 Anatomy and Physiology: Review and Update — For health professionals who have had a course in anatomy and physiology, but want to review and update their knowledge. **3 credits**

BHCE 915 Pathophysiology — For health professionals already familiar with normal physiology, this course emphasizes those principles of pathophysiology which are common to a class of diseases. **3 credits**

CTCR 101 Anatomy and Physiology — A survey of the basic structure and function of human body systems. An introduction to the basic principles of genetics is also included. This is a guided learning course and is equivalent to BHSC 105 in the BCIT General Nursing program. **3.5 credits**

CTCR 102 Writing for Nurses — Teaches general writing skills and their specific application to professional writing tasks in the clinical area. This is a guided learning course and is equivalent to HCOM 107 Writing for Nurses in the BCIT General Nursing program. A guided learning course. **3.5 credits**

CTCR 103 Personal Fitness Management — A combined theory and practice course designed to emphasize the relationship of physical fitness to lifestyle patterns. Focuses on the student's own activity pattern. A guided learning course equivalent to BHSC 118 in the BCIT General Nursing program. **2 credits**

CTCR 104 Physiology — A study of physiological regulation and control in the normal individual based on the fundamentals established in CTCR 101 Anatomy and Physiology, (same text as CTCR 101). A guided learning course equivalent to BHSC 205 in the BCIT General Nursing program. **3.5 credits**

CTCR 105 Human Development 1 — Provides students with an introduction to the theories, methods, concepts and research findings relevant to normal human development from prenatal, through late adulthood, to death. Particular attention is given to the social and familial context in which development occurs. The importance of individual differences, the effects of heredity and environment, and the ethical issues involved in research and treatment are discussed. Applications to clinical situations are explored. A guided learning course equivalent to BHSC 140 in the BCIT General Nursing program. **3.5 credits**

CTCR 106 Human Development 2 — Focuses on the growth and development from middle childhood to death. Physical, cognitive, affective and social development are surveyed. Emphasis is placed on relating developmental concepts to health care. A guided learning course equivalent to BHSC 240 in the BCIT General Nursing program. Prerequisite: CTCR 105. **1.5 credits**

CTCR 107 Sociology — An introduction to those concepts and methods of sociology which are most pertinent to the nurse's observation and understanding of human behaviour in a social context. The internal and external components of man's environment are investigated. Social and epidemiological factors related to health and illness will be reviewed. A guided learning course equivalent to BHSC 239 in the BCIT General Nursing program. **1.5 credits**

CTCR 108 Microbiology — An introduction to basic microbiological concepts including the distinguishing characteristics of micro-organisms, methods of controlling infectious disease and host-parasite relationships. A guided learning course equivalent to BHSC 225 in the BCIT General Nursing program. Prerequisite: CTCR 101. **1 credit**

CTCR 109 Immunology — Provides an understanding of the immune response as it is applied to immunity, surveillance, homeostasis, hypersensitivity, autoimmunity and immunohematology. The course progresses from discussions on the components and biological activities of the immune response to the immune response role in protective as well as disease conditions. A guided learning course. Prerequisite: CTCR 101. **1 credit**

EDUC 601 Human Learning — For nurses and technologists where patient education is a component of the clinical program. The course focuses on the processes of learning and strategies to help oneself, patients and peers learn more effectively. A guided learning course. **2 credits**

EDUC 625 Using Audiovisuals in Education — Introduces a variety of audiovisual media, their utilization and evaluation in educational programs. Topics include simulation exercises, computer-based training and teleconferencing. Opportunities to create A/V software are included in the health oriented practice exercises. A guided learning course. **1 credit**

EHCE 901 Basic Sound Measurement — An examination of the principles of noise reduction and control of sound producing equipment. Prepares those working in the field of environmental or public health to operate equipment used in enforcing municipal noise bylaws. **non credit**

EHCE 902 Basic Pest Control Within Buildings — Identification of household pests and demonstration of safe application of pesticides using equipment currently used in the structural pest control industry. Of interest to members and employees of the B.C. Structural Pest Control Association and public health inspectors. **non credit**

HCSY 610 Health Care Systems 1 — Examines issues related to the development of health care systems in Canada including the roles of various levels of government, health care finance, manpower planning, impact of new health technology. **1.5 credits**

HCSY 620 Health Care Systems 2 — A sequel to HCSY 610. It continues the historical-sociological examination of the national and provincial health care delivery systems. It investigates acute care, long term care and community health care facilities, and current issues in health care. **1.5 credits**

HICE 501 Medical Terminology 1 — An introduction to the language of medicine. Basic rules of medical terminology, medical abbreviations, medical specialties and operative terms are included. There will be a detailed study of medical prefixes, roots and suffixes, with emphasis on analysis and word building. **3 credits**

HICE 906 Coding Review Workshop — Workshop designed to review basic coding principles and current coding practices. Interrelates disease processes and coding. **non credit**

HMGT 600 Health Care Supervisory Skills — Introduces the basics of supervision: problem solving and decision making, selecting and motivating people, performance appraisal, leadership and communication. A guided learning course. **3 credits**

HMGT 601 Health Care Organizational Behaviour — Examines components influencing individual behaviour in organizational settings including attitudes, values and theories of leadership. Text: Robbins, Organizational Behaviour. Also offered in guided learning mode. Pre-reading required. **3 credits**

HMGT 602 Health Care Principles of Management — Reviews the roles and functions of management. Identifies and practices skills required for planning, organization and control in health care agencies. Text: Stoner, Management. Also offered at sites throughout the province. Pre-reading required. **3 credits**

HMGT 603 Health Care Operations Management — Identifies practical skills necessary for systems analysis, method study and productivity improvement. Also offered as circuit course at other sites. **1.5 credits**

HMGT 604 Budgeting in Health Care — Introduces the principles and role of budgeting as part of the financial and health care objectives of the organization. **1.5 credits**

HMGT 605 Human Resource Management — Examines total staffing process including job analysis and description, interviewing, training and performance appraisal. Also offered as circuit course at other sites. **3 credits**

HMGT 606 Health Labor Relations 1 — Explores the development of labor relations in health care. Emphasizes the interpretation and application of negotiated co[illegible] and reviews grievance and arbitration procedures. Also offered as circuit course at other sites. **1.5 credits**

HMGT 607 Long Term Care Labor Relations — For long term care personnel. Examines labor relations in the long term care setting. Emphasizes negotiation, interpretation, application of negotiated contracts, grievances and arbitration. **1.5 credits**

HMGT 611 Organizational Behaviour for Occupational Health Nurses — Examines components influencing individual behaviour in organizational settings including attitudes, values and theories of leadership. Note: credit will not be given for both HMGT 601 and HMGT 611. Text: Robbins, Organizational Behaviour, 3rd ed. **3 credits**

HMGT 701 Information Systems in Health Care 1 — Reviews manual and computer information systems and their terminology. Examines information systems in health care. Also offered as circuit course at other sites. **1.5 credits**

HMGT 702 Health Care Law — Introduces origins and principles of law, legal role of health paraprofessionals and significant legal themes. Pre-reading required. **1.5 credits**

HMGT 703 Financial Administration for Health Care Managers — Introduces accounting tools and concepts of health care systems. Examines cost accounting, program accounting and management reporting. **1.5 credits**

HMGT 751 Information Systems in Health Care 2 — Continues MIS/HIS project management, needs assessment and specifications, cost benefit analysis, implementation. Prerequisite: HMGT 701 or equivalent. **1.5 credits**

HMGT 752 Health Labor Relations 2 — In-depth examination of grievance handling. Introduces arbitration process. Prerequisite: HMGT 606 or equivalent. **1.5 credits**

HMGT 753 Application of Theory to Selected Health Care Problems — Applies theory presented in earlier courses. Concentrates on real life problems encountered in health care systems. Prerequisite: All mandatory courses in Level 1 and Level 2 programs and approval of coordinator. **1.5 credits**

HMGT 914 Performance Appraisal for Health Care Supervisors — Designed to provide both newly appointed and experienced supervisors with skills necessary for objective performance appraisal including methods, standards, implementation, and follow-up of appraisals. **1.5 credits**

HMGT 918 Management Information Systems for Long Term Care Administrators — Designed to show long term care administrators how to put information support systems to work in their organizations. Day 1: Introduction to computer systems; Day 2: Project management and applications. **1 credit**

HMGT 920 Employment Interviewing for Health Care Managers — Presents a variety of proven techniques to reduce costly hiring mistakes. Focuses on acquisition of skills to improve interviewer confidence. **0.5 credits**

HMGT 922 Administrative Cost Control for Long Term Care Administrators — Through a direct approach, long term care administrators learn how to maximize their administrative resources in a cost effective manner. **0.5 credits**

IHCE 905 Infection Control — Topics include clinical microbiology review, common infections, use of antibiotics and laboratory control practices. **3 credits**

MLCE 602 Normal Histology and Microanatomy for Medical Laboratory Technologists Part 1 — Introduces registered technologists (RT's) to the fundamentals of embryology, cell structure and ultrastructure, and the composition of the four primary tissues. No previous experience in histology or microanatomy is necessary, however, a knowledge of gross anatomy and physiology may be beneficial. **3 credits**

MLCE 603 Normal Histology and Microanatomy for Medical Laboratory Technologists Part 2 — Continuation of MLCE 602. **4 credits**

MLCE 604 Clinical Chemistry — A series of lectures on advanced clinical chemistry. BCSMT in co-operation with BCIT. This course will be submitted to CSLT for credits. **1.5 credits**

MLCE 605 Hematology — Lectures and group discussions pursue advanced topics in hematology. BCSMT in co-operation with BCIT. This course will be submitted to CSLT for credits. **1.5 credits**

MLCE 606 Histochemistry — Introduces the concepts of pathology, through an evening lecture series including clinical disorders, general pathology and related technical procedures, eg: for diseases of the G.I. tract. BCSMT in co-operation with BCIT. This course will be submitted to CSLT for credits. **1.5 credits**

MLCE 607 Immunohematology — A lecture series by recognized experts in advanced immunohematology. BCSMT in co-operation with BCIT. This course will be submitted to CSLT for credits. **1.5 credits**

MLCE 608 Clinical Microbiology — This is a series of 8 lectures which deal with histochemistry. BCSMT in co-operation with BCIT. This course will be submitted to CSLT for credit. **1.5 credits**

MLCE 610 Advanced Hematology (The Red Cell) Part 1 — A correspondence course to prepare registered technologists for the advanced registered technologist examination. Acquaints students with new and advanced theories of hematology. The Canadian Society of Laboratory Technologists (CSLT) grants 7.4 credits for completion of MLCE 610. **3 credits**

MLCE 611 Advanced Hematology (The Red Cell) Part 2 — A continuation of MLCE 610. Prerequisite: MLCE 610.CSLT grants 7.2 credits for completion of MLCE 611. **3 credits**

MLCE 622 Advanced Clinical Parasitology — Hands-on workshop to improve skills in identifying the morphological features of the intestinal protozoa, coccidia and blastocystis. Clinical aspects, treatment and specimen processing will be reviewed. This course will be submitted to CSLT for credit. **1.5 Credits**

MRCE 611 Computed Tomography — Introductory course provides a broad theoretical framework for understanding the principles of Computed Tomography (CT). Lays the basic foundations for practical aspects of C.T. scanning. **3 credits**

MRCE 612 Technological Advances in X-ray Imaging — Reviews the fundamental radiographic and fluoroscopic imaging schemes. Describes changes with each component of the imaging scheme with emphasis on the x-ray tube, scattered radiation grids, geometric tomography, filtration, image intensification and the impact of computer technology on x-ray imaging methods. 1 AC credit. **3 credits**

MRCE 902 Refresher Program for Medical Radiography Technologists — Designed for Medical Radiography Technologists who want to re-enter the work force. Consists of pre-reading, classroom instruction and clinical sessions. Prerequisite: Permission of the Coordinator. **non credit**

MRCE 912 Radiation Biology for Medical Radiography Technologists — Designed for the technologist who wishes to have a greater understanding of the effects of radiation on the cells. This course commences with a review of cellular biology and the basic interactions of radiation with matter, and continues with an examination of the specific types of intracellular responses to radiation and the factors which influence these responses. The course concludes with radiation pathology and human experience with radiation injury. **3 BCIT credits. 0.5 AC credit**

MSSC 101 Human Anatomy and Physiology — A survey of the basic structure and function of human body systems. The course is offered in guided learning format. **3.5 credits**

MSSC 102 Medical Terminology — An introduction to the language of medicine emphasizing prefixes, suffixes, roots and operative terms. The course includes pre-reading and practice exercises relating to prefixes and suffixes plus three 4-hour Saturday sessions - two sessions on roots including an orientation to the anatomy of the system involved, and one session on the terminology specific to operative procedures. **1.5 credits**

MSSC 103 Medical Surgical Procedures — An overview of common operative techniques used to provide patient care within the medical surgical setting to include principles of asepsis and perioperative procedures. Topics will be presented with an emphasis on product knowledge. **3 credits**

MSSC 104 General Instrumentation — Identification of medical surgical instruments, quality analysis, and the use of instruments in selected operative procedures. **1.5 credits**

MSSC 105 Biomedical Electronic Safety — The basic concepts of electricity and their applications in typical electrical wiring systems, electrical safety hazards created by biomedical equipment in hospitals, and electrical safety standards required for hospital equipment. Course work will be related to specific biomedical equipment found in a typical hospital. **1.5 credits**

***NUCE 901 Refresher Course for Graduate Nurses** — Designed for graduates of approved schools of nursing. Theory and clinical practice are combined to assist nurses to meet clinical competency objectives in medical/surgical nursing. **non credit**

***NUCE 904 Obstetrical Nursing (Qualifying) 1** — Obstetrical nursing theory required by graduate nurses from outside Canada in preparation for R.N. examinations in B.C. Content is in guided learning format. **non credit**

***NUCE 905 Obstetrical Nursing (Qualifying) 2** — Four weeks clinical practice following completion of NUCE 904. May be a preceptorship arranged by BCIT for graduate nurses currently employed in acute care or supervised clinical practice for unemployed graduates. **non credit**

***NUCE 906 Psychiatric Nursing (Qualifying) 1** — Psychiatric nursing theory required by graduate nurses in preparation for R.N. examinations in B.C. **non credit**

***NUCE 907 Psychiatric Nursing (Qualifying) 2** — Four weeks supervised clinical practice following completion of NUCE 906. **non credit**

*Approval of application by the Health Part-time Studies coordinator is required before registering in these courses as seats are limited. Fee refunds will not be granted to students cancelling in the 2 weeks prior to class start unless a substitute can be found.

OHCE 101 Accident Prevention 1: Job Safety Analysis — Reviews the history of the safety movement, accident investigation, job safety analysis, inspections and observations. **3 credits**

OHCE 102 Accident Prevention 2: Employee Motivation — How to maintain interest in safety, safety talks, how to deal with problem employees, off-the-job safety, incident recall techniques, and job pride development. **3 credits**

OHCE 103 Accident Prevention 3: Safety Design and Equipment — Examines accident prevention for industrial operations, the engineering and technology involved in the various operations, safety standards for buildings, equipment and operations. **3 credits**

OHCE 104 Accident Prevention 4: Industrial Applications — Includes accident prevention for industrial operations, the engineering and technology involved in the various operations, safety standards for buildings, equipment and operations, personal protective equipment and machine guarding. Prerequisite: OHCE 103. **3 credits**

OHCE 201 Industrial Health and Safety 1: Legislation — Examines legislation relevant to safety and the agencies enforcing this legislation. **3 credits**

OHCE 202 Industrial Health and Safety 2: Policy Application — Examines various types of safety programs, risk management, emergency planning, transportation and storage of hazardous materials. **3 credits**

OHCE 203 Industrial Health and Safety 3: Loss Control and Auditing — Deals with the total loss control concept. Covers audits and measurement of safety performance. Also looks at office safety and safety in B.C. industries such as the forest industry, transportation, food processing and general manufacturing. Prerequisite: OHCE 101, 102, 103, 104, 201 and 202. **3 credits**

OHCE 204 Industrial Health and Safety 4: Hazardous Materials — Covers the transportation of dangerous goods, Workplace Hazardous Materials Information System (WHMIS) and emergency planning. Reviews the similarities and differences between "TDG" and "WHMIS" and examines in depth both sets of legislation. **3 credits**

OHCE 301 Fire Protection 1: Fire Prevention — Examines heating hazards, electrical hazards, chemistry of fire, flammable liquids, fire detection, portable fire extinguishers and sprinkler systems. **3 credits**

OHCE 302 Fire Protection 2: Gases and Flammable Materials — Includes fire causes, statistics, flammable gases, storage, combustible gases, chemical hazards, fumigants, plastics, fire alarms. Note: Mandatory for OH&S certificate. Prerequisite: OHCE 301. **3 credits**

OHCE 401 Industrial Hygiene 1: Toxicology — Examines health concerns related to the use of chemicals in the work place. Permissible levels of toxicity and hazard assessment reviewed. Prerequisite: Math 12, Chemistry 11 or permission of instructor. **3 credits**

OHCE 402 Industrial Hygiene 2: Noise — Includes acoustics and noise control, use of sound level meters and noise dosimeters. Prerequisite: Math 12, Physics 11 or permission of instructor. **3 credits**

OHCE 403 Industrial Hygiene 3 — Examines radiation and includes detection, evaluation and control of radiation, and extremes of temperature and pressure. Prerequisite: Math 12, Physics 11, Chemistry 11 or permission of instructor. **3 credits**

OHCE 902 Basic Anatomy and Physiology for Occupational Health — Develops basic knowledge of human anatomy and physiology with reference to effects of certain environmental factors on the major organs. **non credit**

OHCE 903 Controlling Loss Through Interpersonal Skills — This one-day workshop is for people concerned with Occupational Health and Safety. It examines image building and the use of techniques to improve the stature of safety within the organization. **non-credit**

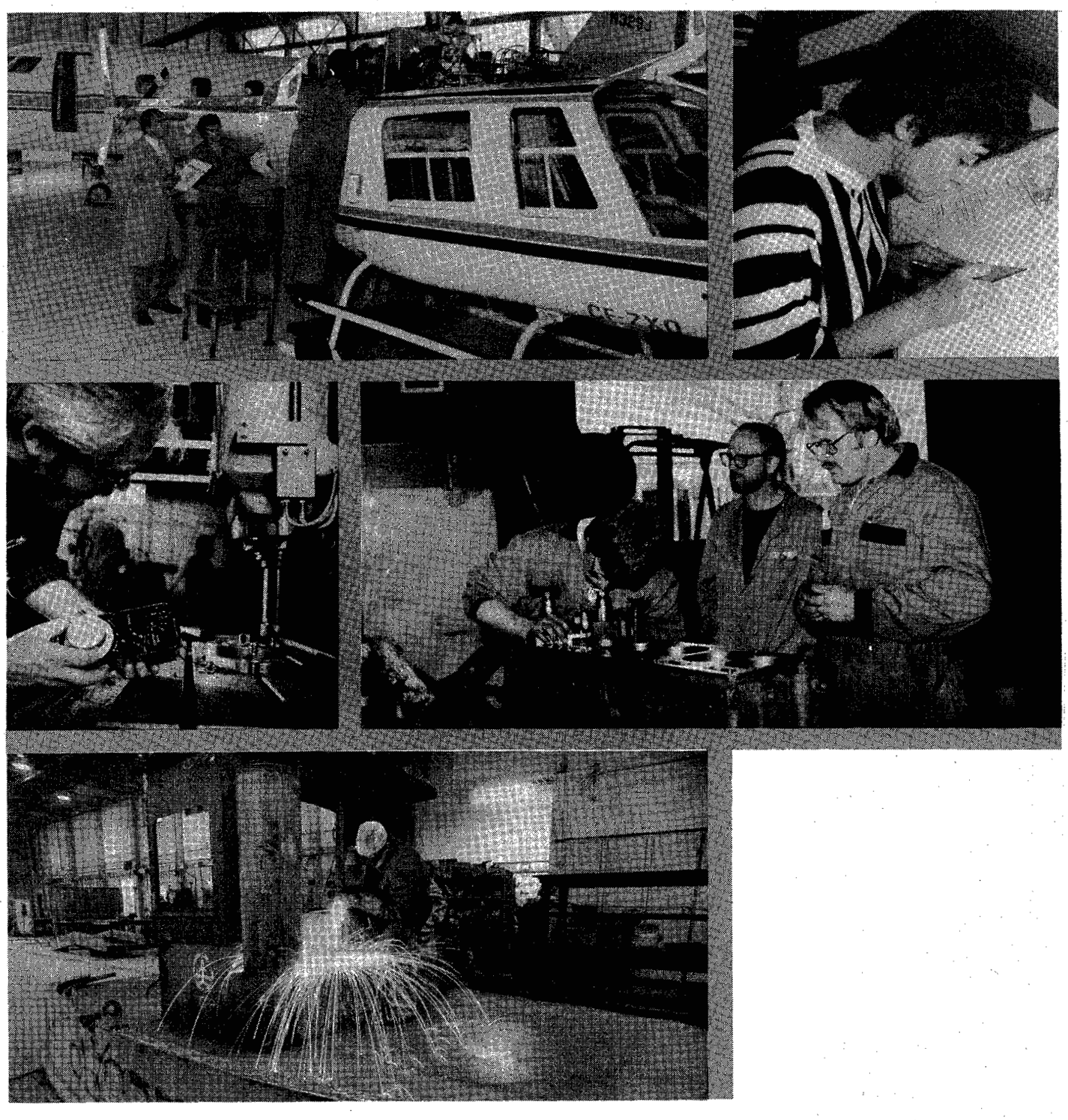
POCE 903 IPOS Trans-Femoral Prosthetic System — Provides theoretical basis for and practical experience in the newly developed I.P.O.S. casting and socket fabrication procedures. **non-credit**

POCE 905 Rehabilitation of the Amputee — For all health care professionals concerned with the rehabilitation of the amputee. Understanding current prosthetic practice should aid them in setting realistic goals for their amputee patients or clients and in integrating their services with that of the prosthetist. Topics include preprosthetic care, immediate post operative prosthetic management, normal human locomotion, prosthetic components and designs and gait training for the various amputation levels. **non-credit**

POCE 906 Prosthetic Feet — A two day workshop for prosthetists. **non-credit**

RESH 601 Understanding Research in Health Sciences — The first of 3 courses which constitute the practical research component of the Advanced Diploma in Health Sciences program. Focusing on practical research skills, this course examines the components of the research process, the terminology commonly used in research reports and criteria for evaluating research. Students will learn how to critically evaluate research performed and reported by others in their field. A guided learning course. **3 credits**

RESH 602 Preparing a Health Science Research Proposal — Builds on the knowledge and skills of understanding research in health science. Students will be expected to select an appropriate research question or problem, plan a research project, write a research proposal and evaluate that proposal. Prerequisite: RESH 601. **3 credits**



School of Trades Training

Faculty and Staff

Len McNeely, R.I.A., M.B.A., Acting Dean
Marv Woolley, Dipl.T., A.ScT., Acting Director

Trades Part-time Training

Class Times

Classes for part-time trades courses are generally scheduled for three hours, two nights a week; or on Saturdays.

Part-time trades courses are scheduled to run on weeknights from 19:00 to 20:00.

ALWAYS CHECK AT TIME OF REGISTRATION FOR CURRENT CLASS SCHEDULES.

Trade Qualification Certificate Examinations

The School of Trades Training Part-time Studies offers refresher courses for tradespersons interested in preparing for their trade qualification certificate examinations.

To become eligible to write a TQ examination, approval from the Ministry of Advanced Education and Job Training is required. It is strongly recommended by the Ministry that the tradesperson contact the area office nearest their residence before registering at BCIT. This will allow for processing the application and issuing approval to the tradesperson in time for him/her to write the examination directly after taking the refresher course.

Canada Employment and Immigration Sponsorship

CEIC may sponsor students taking any program in excess of 12 weeks. Students should contact their local manpower office for information regarding sponsorship.

Industry Services: Customized Programs, Consulting and Development Services

Marv Woolley, Acting Director, Part-time Studies
Telephone: 432-8261

Industry Services provides another training option for your business organization. School of Trades Training Part-time Studies has skilled professionals available to train your staff - here, or on your premises.

We will work together with you to develop a training strategy that will fill your requirements. In addition, the resources available at BCIT will provide a comprehensive range of training.

All the courses in this calendar contain material which can be adapted for presentation at the required level. With the rapid implementation of new technologies in our workplace, it is more important than ever that companies use local resources that are easily accessible to train their personnel.

If your company has a training project, or if you wish to draw on the resources of BCIT for support in any new venture, contact Part-time Studies to find out how we can help you.

Computerized Maintenance Program for Industry Services —A series of three practical workshops for those who are directly responsible for equipment maintenance; in particular, maintenance managers, superintendents, foremen and planners. Enrollment is restricted to allow each participant the opportunity to work alone on a computer terminal. Hardware: IBM PCs or compatibles. Software: COMAC Computerized Preventive Maintenance System.

Eric Morse, Program Head
Industry Services
Telephone: 432-8638

AVIATION TRADES

Aircraft Maintenance
Avionics
Aircraft Structures

Bill Foyle, A.M.E., Associate Dean
Telephone: 278-4831
Patrick Mulldoon, A.M.E., Program Coordinator
Telephone: 278-4831
Sharyl Brown, A.M.E., Program Coordinator
Telephone: 278-4831
Program Advisor
Telephone: 432-8467

Course Descriptions

AVIA 900 Aircraft Electricity (30 hours) — Introduces the students to the fundamentals of aircraft electricity. The focus is on the basic concepts of electricity: principles, units of measurement, production of electricity, distribution, industry standards and aircraft applications.

AVIA 903 Aircraft Instruments (30 hours) — An introductory course focusing on instrument elements, instrument mechanisms, properties of the atmosphere, pilot-static systems, gyroscopic instruments and remote sensing instruments. Suitable for aircraft maintenance engineers, pilots and novices.

AVIA 905 Air Regulations (30 hours) —An in-depth study of Air Regulations, Navigation Orders and the Engineering and Inspection Manual - required knowledge for aircraft maintenance personnel. Instruction includes correct procedures for certifying aircraft, products and repair, and how to interpret the regulations for the correct application. Suitable for those planning to write the Ministry of Transport category "A" or "E" Air Regulation Examination.

AVIA 907 Private Pilot Licence Ground School (40 hours) — For those planning to write the Ministry of Transport Private Pilot Examination. The course focuses on ground school training requirements in aviation theory: aerodynamics, aircraft engines and airframes, air regulations and air traffic control, navigation and flight planning, meteorology, radio systems, communications, pertinent medical factors.

AVIA 910 Private Pilot Advanced Ground School (30 hours) — Recommended to those individuals who require a primer for an examination, or private pilots. Topics include meteorology, navigation, air regulations and airmanship. Emphasis is on practical applications (tips) for ground preparation and trip planning.

AVIA 912 Aircraft Reciprocating Engines (30 hours) — An introduction to the construction and operating principles of aircraft reciprocating engines. The course covers engine classifications, operating principles, inspection, lubricating systems, engine components, and more.

AVIA 915 Aircraft Maintenance Engineer's "B" Licence Upgrading (30 hours) — Prepares qualified aircraft maintenance engineers (category "A" or "R") for the Ministry of Transport category "B" endorsement examination. Curriculum includes: wood, welded steel, stressed skin and composite structures; fabric covering; corrosion control; material identification; non-destructive testing; fixed and rotary wing general knowledge.

AVIA 917 Aircraft Sheet Metal Introduction (30 hours) — The fundamentals of aircraft sheet metal as they apply to the repairing and assembly of modern day aircraft. The course covers basic aircraft structures, structural considerations, shop and safety

regulations, pattern layout, forming techniques, fasteners and riveting, bend allowances, aircraft blueprint reading, and corrosion control.

AVIA 920 Aircraft Sheet Metal Advanced (30 hours) — A continuation of AVIA 917, this course emphasizes more complex sheet metal techniques and applications through intensive hands-on training. Course includes: patch plate and flush repair techniques; imposed load stress, crack propagation and load transfer analysis; layout and transfer techniques; bend allowance computations; damage analysis and repair procedures; implications of minor and major repairs. Prerequisite: AVIA 917 or equivalent.

AVIA 923 Helicopter Maintenance (30 hours) — An introduction to associated systems found in helicopters. Course includes: history of the helicopter; principles of flight; flight controls; main and tail rotor systems; transmissions and engines; airframe and associated systems. Hands-on training is achieved through the performance of a Daily Inspection, as prescribed by a helicopter manufacturer. Of interest to novices and pilots alike.

AVIA 925 Avionics (30 hours) — An introductory course designed for anyone interested in aircraft electronics. Curriculum includes: basic aircraft radio operating principles; high frequency; emergency locator transmitters and audio panels; compass systems; variable omni range; localizer and glideslope navigational equipment; automatic direction finder; encoding altimeters; transponders; weather radar and gyroscopes.

AVIA 927 Aircraft Composite Repair (28 hours) — An introduction to bonded structures. Wet lay-up and hot bonded repairs for aircraft composite components will be covered. Emphasis is placed on precision proportioning of resins and hardeners and hands-on experience in repairing and fabricating with composite material. Course covers laminated construction techniques and repairing honeycomb structures. *Persons allergic to solvents and resins should not attempt this course.

AVIA 930 Aircraft Drafting and Blueprints (32 hours) — Designed for anyone interested in learning aircraft drafting and blueprint reading. Terminology, standards, views, lettering, scales and techniques are introduced through practical assignments.

AVIA 935 Aircraft Maintenance Introduction (30 hours) — An introductory course in aircraft maintenance fundamentals. Terminology; how an aircraft flies (achieves lift); aircraft construction and materials; aircraft control devices and basic inspection principles are covered. Ideal for aircraft mechanics, potential aircraft maintenance engineers, pilots and owners of aircraft.

AVIA 938 Aircraft Maintenance Advanced (30 hours) — A continuation of AVIA 935. Topics include flight control; hydraulics; landing gear, wheels and brakes; other associated aircraft systems. Prerequisite: AVIA 935 or equivalent.

AVIA 940 Gas Turbine Engines (30 hours) — For students interested in learning the principles of the gas turbine engine. In-depth knowledge of the engine — engine development, operating principles, classifications and terminology — is gained through this course. A field trip to Canadian Airlines International engine overhaul facility is included.

AVIA 945 Commercial Pilot Licence Ground School (40 hours) — For those planning to write the Ministry of Transport Commercial Pilot Examination. Instruction focuses on ground school training requirements: meteorology, aircraft engines, airframes, air navigation techniques, aerodynamics, theory of flight, electronic navigation, airmanship, air regulations.

AVIA 960 Aircraft Painting (30 hours) — Conveys information about the various substrates used on aircraft. Topics include: paint types and applications, job hazards, safety equipment applications, paint stripping, metal preparation and treatment, priming and metal etching, use of spray equipment and spray booth, window cleaning, masking for stripes, accents, color choice.

AVIA 965 Aircraft Manufacturing and Production Processes (30 hours) — Introduces production and manufacturing processes involved in aircraft production and assembly. Course includes techniques, technologies and cost and time considerations — from blueprint, to shop floor, to final product. Ideal for persons already engaged in production, sheet metal work, planning or other industry-related fields. Prerequisite: must have some experience in the aviation field, preferably in aircraft sheet metal work or maintenance.

AVIA 970 Aircraft Maintenance for the Pilot/Owner (12 hours) — The course uses maintenance guidelines set by the Ministry of Transport to provide hands-on training for the pilot/owner. Space may be available (subject to approval) for some owners to work on their own aircraft (contact Sharyl Brown at Sea Island Campus 278-4831).

BUILDING DESIGN AND CONSTRUCTION TRADES

Bricklaying
Carpentry
Construction
Drafting
Floor Covering
Glazing
Joinery
Painting and Decorating
Piping, Plumbing and Gas
Upholstery

Jack Scarfe, Associate Dean
Telephone: 432-8277
Kal Klasen, Dipl.Ad.Ed., Dipl.Instructor, Program Head
Telephone: 432-8556
Chi Wong, Program Assistant
Telephone: 432-8205
Program Advisor
Telephone: 432-8467

BRICKLAYING TRADE

Course Descriptions

BRIK 948 Masonry and Bricklaying Basic (24 hours) — This introductory hands-on training is for students who wish to learn basic masonry and bricklaying skills. About 60% of the training is practical, including proper use of hand tools, and patio, barbecue, chimney and fireplace construction. Theoretical instruction covers the manufacture of cement, brick and rock construction, blueprint reading and related design information. Those who wish to investigate the possibilities of a career in bricklaying will gain sufficient exposure to the industry to make a choice. However, the time-restricted, modular projects are not intended to develop skills to professional standards.

CARPENTRY TRADE

Course Descriptions

CARP 902 Electric Blasting (7 hours) — This one day course covers electric blasting, including the proper use of electric caps, design of blasting circuits, fault finding and blasting machines. Safety procedures and site layout are demonstrated with a live fire practice. Course does not grant W.C.B. or Ministry of Mines Blasting Ticket, although it is recommended as a prerequisite for those planning to write the examination.

CARP 903 Blasting (15 hours) — Non-electric blasting is covered in this intensive one week course. Students learn proper blasting operations, theory and use of explosives, legal requirements, transportation regulations, detonating cord and special cord systems, causes of misfires and safety routines. Although students do not obtain provincial certification, the course has proven to be more than adequate for W.C.B. or Ministry of Mines exams. Taught by T.H.M. Silva and Associates Ltd. Call 521-2993 for more information and testing requirements.

CARP 904 Explosive Actuated Tools (18 hours) — Designed for persons requiring training in the safe use of power fasteners. Instruction covers standard procedures for wood, metal and concrete fastening using drills and explosive actuated equipment. Suitable for carpenters, steel fabricators or any construction subtrades who require these procedures to be performed on site. Students receive an operator's certificate in accordance with W.C.B. requirements.

CARP 905 Blueprint Reading for Construction (35 hours) — Designed for persons working in the construction trades who wish to read blueprints. Some related building trade experience is desirable, although it is not mandatory. Students learn to complete projects and problem-solve in the classroom. All aspects of building specifications, including metric conversion, foundations, millwork and scheduling is covered. After successful completion, students will understand the structural principles of buildings and be able to read blueprints for architectural construction and related electrical, plumbing and interior finishing. A certificate of completion in "Blueprint Reading for Construction" is issued to graduates of the course.

CARP 906 Custom Cabinet Construction and Installation (36 hours) — Designed for carpenters and kitchen cabinet installers who must build on-site and install to specifications. Cabinet making, basic joinery, construction methods, use of glues and countertop installation are taught in a carpentry shop setting. Students must have experience in the use of carpentry hand and power tools, and a working knowledge of framing methods.

CARP 908 Log Construction (240 hours) — This course is offered every summer at the Burnaby Campus for the serious log building enthusiast. Authors and instructors, F.Dan Milne and James Mitchell, instruct this practical full-time course. Instruction includes safety, selection of logs, blueprint reading, building design and layout, use of hand and power tools, cutting, shaping, notching and assembly of floors, walls, trusses and roofs. Students will construct a full scale building during the course. Students must be in good health and able to work in a construction setting.

CARP 909 Carpentry TQ Refresher (56 hours) — For tradespersons preparing for the Provincial Carpentry Trade Qualification Examination, and for those wanting a current review. Instruction is provided in mathematics, foundations, concrete form construction, framing, boarding, sheathing and scaffolds, roof construction, exterior finish, interior wall covering, interior finish, stair building, heavy timber construction, and carpentry in masonry construction. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

CARP 910 Introduction to Log Construction (64 hours) — A part-time evening course taught as a component of the annual full-time program CARP 908. Students learn log construction methods through classroom instruction, demonstrations and practical training on site. Suitable for persons with a general interest and those with physical/health limitations.

CARP 911 Stair Construction (20 hours) — Construction mathematics, building codes, stair layout and assembly are taught for carpenters, renovators and related trades persons. Students build typical straight, split landing and circular stairs in accordance with current municipal building code requirements (1987).

CARP 912 Log Construction (128 hours) — A weekend course for log building enthusiasts. As a component of the full-time program, CARP 908 students learn log building in a modified format, including all aspects of construction. Instructors F.Dan Milne and James Mitchell teach this course to students who are unable to attend full-time classes.

CARP 913 Concrete Formwork Design (24 hours) — For carpenters, contractors and those working in residential, industrial and heavy construction. Instruction is provided in the proper construction of footings, wall formwork, column formwork, concrete stairs, beams, girders, slabs and concrete technology. Suitable for related trades and service persons involved in concrete placing.

CARP 915 Construction Supervision and Project Management (48 hours) — Provides instruction in project planning, scheduling, contract development, tendering, quotations, start-up, records, cost control, supervisory skills and communications. After successful completion, students have a theoretical foundation in residential, multi-residential, light industrial project supervision, scheduling, contract administration and cost control. Course also includes an introduction to computerized project management and scheduling. A certificate of completion in "Construction Supervision and Project Management" is issued to graduates of the course.

CARP 917 Construction Estimating Basic (36 hours) — Designed for trades persons involved with cost estimating and bidding. Unit pricing, account codes, project scheduling, quantity survey and contract preparation are covered in detail. Students learn how to estimate multi-residential, light commercial and renovation construction using proven principles and practices.

CARP 921 Framing, Roofing and Layout (36 hours) — West Coast framing and layout are covered in this weekend course designed for students with little or no practical experience as carpenters. Students construct residential building components in shop, and on site. After successful completion, students will have a complete theoretical understanding of traditional framing and be able to perform most assembly skills. The course is suitable for entry level, or as an upgrading opportunity for existing construction framers, laborers or apprentices. A certificate of attendance in "Framing, Roofing and Layout" is issued to graduates of the course.

CARP 927 Interior Finishing Carpentry (32 hours) — Will enable carpenters or those who have worked in the trade for more than three years to complete interior residential finishing to professional standards. Essential skills covered include door hanging, window installation, cabinet installation, material finishing and hardware application. Students learn by working on shop

assignments and should know the proper use of carpentry hand and power tools before enrolling in this course.

CARP 935 Residential Building Procedures (30 hours) — Focuses on the planning, estimating and construction of new single or multi-residential units. Designed for owners, realtors, bankers, first-time builders and carpenters. The course reviews all phases of wood frame construction, permit procedures, project scheduling, cost control, municipal inspection requirements, site supervision and preparation; on-site visits to residential building projects with local building inspectors is included. Students are encouraged to utilize a proposed residential building or renovation project for learning purposes.

CARP 937 Transit and Level Basic (21 hours) — Students learn the proper use of the builder's level and transit for construction, road building, iron work and site layout applications. Classroom theory and practical hands-on training provides students with the basic skills to use equipment properly. The course includes a review of basic mathematics, algebra and trigonometry. A certificate of completion in "Transit and Level" is issued to graduates of the course.

CARP 939 Transit and Level Upgrade (21 hours) — This is an intermediate to advanced course for experienced persons. Advanced applications, problem solving and hands-on training give the instructor an opportunity to work with individuals in a self-paced manner. Ideal as a refresher course for journeymen carpenters, foremen, supervisors and project managers. Prerequisite: CARP 937 or equivalent.

CARP 941 Industrial Rigging and Safety (24 hours) — Designed for the heavy construction tradesperson who must work with rigging, overhead cranes, signalling, knot tying, load calculation and on-site safety procedures. Students learn W.C.B. rules and regulations and do hands-on training in a simulated heavy construction site setting at the Burnaby Campus.

CARP 947 Steel Stud Construction (16 hours) — Provides students with the basic skills and knowledge required to use steel studs and components in building construction. Students learn layout, assembly, use of hand tools and West Coast framing methods. Suitable for carpenters or related trades persons who must work with steel studs, especially custom office builders and renovators.

CARP 949 Residential Roofing Application (16 hours) — This short course covers asphalt shingle, cedar shake, tar and gravel roofing applications, including prefabricated aluminum. Suitable for experienced carpenters and builders wanting to complete typical residential projects, repairs and re-roofing. Students learn to do commercial estimating and roofing to trade standards. Instead of full-scale shop projects, modular components will be completed on an individual basis for practical training.

CARP 950 Applied Construction Mathematics for Carpenters (18 hours) — Designed as a refresher for carpenters, estimators, site supervisors or persons having to make mathematical calculations for construction purposes. Course reviews whole numbers, fractions, decimals, algebra, geometry, trigonometry and the transposing of formulas as required for on-site calculation and application.

CARP 954 Vinyl Siding Application (16 hours) — Commercial vinyl siding is examined and demonstrated in a shop setting. Students learn estimating, product selection, use of hand and power tools, layout, application procedures and related production methods. Residential builders, carpenters and renovators will benefit from this short course, in a rapidly growing industry with great potential for self employment.

CONSTRUCTION TRADE

Course Descriptions

CNST 934 Drywall Installation and Finishing (32 hours) — An introductory course designed for persons who want to learn proper drywalling methods. Product theory, boarding methods, beading, taping procedures, use of hand tools, sanding and final finishing methods are covered in this combination of classroom theory and practical training. Students learn proper drywalling methods in a modular mock-up training setting. Suitable for carpenters, renovators and pre-apprentice training.

CNST 953 Fiberglass Fabrication and Repair (24 hours) — An introductory course designed for persons who want to learn basic fiberglass technology. Theory, product knowledge, adhesion principles, mold construction, selection of fabric and cloth are examined in marine, industrial and commercial applications. Students receive limited hands-on training in simple shop projects. Not intended for auto body repair.

CNST 955 Traffic Control Training (4 hours) — A comprehensive course covering all the skills necessary to meet minimum provincial standards for persons seeking employment as flagging personnel in highway, construction or film industry projects. Instruction is delivered in a practical setting and includes safety, employee relations, traffic control and on-site responsibilities. Audiovisual aids augment the practical instruction. This course meets the minimum requirements of the Ministry of Transportation and Highways.

DRAFTING TRADE

Course Descriptions

DRFT 901 Drafting Basic (42 hours) — An introductory course in fundamental architectural, mechanical and civil drafting. Provides a foundation in basic drafting, including the use of standard equipment and tools, line work, lettering, applied mathematics, plane geometry, orthographic projection, dimensioning, sections, charts and graphs. Prepares students for careers in drafting or further drafting studies. Students receive an introduction to computer-assisted drafting with limited hands-on experience. Projects are self-paced.

DRFT 903 Drafting Advanced (42 hours) — Expands on the basic drafting course and allows students to progress into their drafting specialty—architectural, civil, mechanical or structural—which they pursue in-depth, touching on the others as they interrelate. Part of the required project for this course will be produced on a computer. After successfully completing DRFT 901 and 903, students have an overview of the parameters affecting building design and construction; as well, a certificate of completion in "Drafting" is issued. Prerequisite: DRFT 901 or equivalent.

DRFT 905 Industrial Rendering and Drawing (24 hours) — For construction estimators, designers, builders or anyone having to make professional graphic presentations. Course includes basic blueprint reading, three-point perspective, shading, hard line presentation, orthographic projections and the use of color.

FLOOR COVERING TRADE

Course Description

FLOR 920 Carpet Installation Basic (24 hours) — An introduction to carpet laying for those considering employment in the industry, and for those wishing to enter the trade at a pre-apprentice level. Hands-on training in the use of tools and application methods; and instruction in fabrics, weaves, product lines and surface preparation are covered. Students are taught to recognize, identify and explain proper installation procedures. With experience, students may find employment opportunities based on further training.

GLAZING TRADE

Course Descriptions

GLAZ 901 Blueprint Reading for Glaziers (18 hours) — For glaziers who wish to improve their understanding of glazing trade blueprints. The course includes intensive use of architectural drawings and shop drawings to improve glaziers confidence in blueprint reading.

GLAZ 902 Storefront Fabrication and Installation (30 hours) — For glaziers who wish to improve their storefront fabrication and installation skills. The course covers various types of commercial storefront materials. Students learn to fabricate and install a storefront in the fully equipped glazing shop training area. Power tools are provided, but students are required to supply their own basic hand tools.

GLAZ 903 Glass and Mirror Fabrication and Assembly (30 hours) — Provides basic cutting, edging and drilling, glass and mirror skills for glaziers and others. The course covers various types of glass and mirror. Students practice cutting in the fully equipped glazing shop training area. Advanced students learn to fabricate and install a mirror wall. All necessary tools are provided.

GLAZ 904 Glazing Pre-employment (240 hours) — Introduces the basics of glazing to individuals about to enter the industrial glazing trade. Basic use of tools, safety, blueprint reading, cutting and installation of various glass products is taught in the fully equipped shop training area.

GLAZ 905 Skylight Fabrication, Assembly and Installation (12 hours) — This Saturday morning course is a general interest class for persons wishing to learn how to install skylights. Various residential and commercial skylight systems will be discussed. Students learn to fabricate and install a commercial skylight in the fully equipped glazing shop training area. Power tools are provided, but students are required to supply their own basic hand tools.

JOINERY TRADE

Course Descriptions

JOIN 901 Woodwork Basic (42 hours) — Course content includes benchwork and joinery; how to use hand tools, power tools, routers and templates; layout; basic joints used in wood construction; construction methods; assembling with glue; preparations for finishing. Furniture design principles, furniture joinery and professional finishing methods are reviewed. Suitable for entry level training and general interest students.

JOIN 902 Benchwork Upgrade (64 hours) — For those who have completed JOIN 901 or equivalent. Focuses on intermediate to advanced benchwork and joinery production skills. Students receive individual attention and work on projects in a self-paced program utilizing hand tools and power equipment. Course fee does not include materials for major projects. Prerequisite: JOIN 901 or equivalent.

JOIN 923 Furniture Finishing and Refinishing (24 hours) — Designed for general interest persons as well as furniture finishers, upholsterers and cabinet builders. Stripping, surface preparation, repair and refinishing of traditional and modern wood furniture is examined in detail. Students learn staining, oil applications and French polishing techniques, including spray painting in an industrial shop setting. Students are required to supply their own training projects.

PAINTING AND DECORATING TRADE

Course Descriptions

PDEC 929 Painting and Decorating Basic (32 hours) — Persons with little or no practical experience learn fundamental skills applicable to residential painting. The course covers theory, safety and practical skills development; students complete practical projects under supervision in a well-equipped shop. They learn to prepare and paint most surfaces found in or out of the home.

PDEC 930 Painting and Decorating: Initial Entry (240 hours) — Provides basic training for students about to enter the painting field. After successfully completing this course, students have enough basic skills to enter the work force as a painting apprentice, or work in the retail market supplying paint and related materials and equipment.

PDEC 933 Painting and Decorating TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Painting and Decorating Trade Qualification Examination, and for those wanting a current review. Theoretical instruction is given in basic components of paint and color mixing; basic tools and equipment; interior and exterior surface preparation; procedures for applying coatings by brush and roller; safety regulations; paint failures; natural wood finishing including staining and graining; wall coverings; spray painting and related equipment; corrosion control and industrial coatings; trade mathematics. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended before you enroll.

PDEC 943 Complete Auto Spray Painting (40 hours) — For those with a working knowledge of spray painting. The course includes: surface preparation, priming, how to auto spray-paint topcoats of acrylic enamels. Students work on individual projects in an industrial shop setting using a professional spray booth and modern painting equipment. Prerequisite: Some practical experience in spray painting and a general understanding of painting theory.

PDEC 945 Wall Covering Application (24 hours) — Introduces experienced painters to professional wall covering techniques and procedures. The course reviews surface preparation, material selection, application procedures and production methods for commercial projects. Students practice hanging wall coverings in shop assignments.

PDEC 946 Wall Covering (120 hours) — A full-time course which provides extensive training in the application of modern wall coverings. Students are taught the skills needed to hang materials in a residential or commercial environment.

PDEC 952 Professional Sign Painting (240 hours) — A full-time, two month, intensive course for students wishing to learn sign painting to professional standards. The course includes: letter construction; layouts and patterns; freehand brush lettering; photographic silk screening; surfaces and preparations; applications for awning materials and flexible sign surfaces; airbrush and spray painting; loose leaf and transfer gold; truck lettering; production methods and estimating; bidding procedures. After successfully completing this course, students receive a certificate of completion in "Professional Sign Painting".

PDEC 957 Sign Painting Basic (60 hours) — A hands-on, practical training course to introduce students to professional sign painting techniques: letter construction, sign layout and design, use of colors, product knowledge, silk screening, brush techniques. Students prepare full scale signage and learn modern production methods. A certificate of completion in "Sign Painting" is issued to each student who successfully completes PDEC 957 and 959.

PDEC 959 Sign Painting Upgrade (36 hours) — Advanced sign painting methods, air brush, gold leaf lettering, truck lettering and working on flexible surfaces are covered in this course. Self-paced projects are assigned to students according to individual skill levels. It is ideal for practicing sign painters, graphics designers and those involved with commercial applications who want to learn the latest techniques in professional sign painting. After successfully completing this course (and PDEC 957), a certificate of completion in "Sign Painting" is issued. Prerequisite: PDEC 957 or a minimum six months working experience in sign painting.

PIPING, PLUMBING AND GAS TRADES

Course Descriptions

PPGS 902 Hydronic Heating: Residential, Commercial, Industrial (42 hours) — This course covers residential, commercial and industrial hydronic boilers, boiler selection and boiler size; heat loss calculation, circulating pumps, mixing valves and controls, expansion tanks, heat meters; rust and frost protection; oxygen permeation for plastic pipes; radiant floor heating systems, baseboard heaters/radiators. Designed to inform and educate the hot water heating contractor presently working in the field.

PPGS 904 Water Pipe Sizing: Engineered Method (18 hours) — Provides a comprehensive study of sizing water supply and distribution systems using the engineered method. Course is theory only. Prerequisite: Students must be employed in the plumbing industry as journeymen, estimators, inspectors or systems designers.

PPGS 905 Cross Connection Control (30 hours) — Designed for those who install and maintain backflow prevention devices in domestic, commercial, industrial and public service water supply systems. After successful completion, students have the opportunity to challenge both the theoretical and practical certification exams through the B.C. section of the American Water Works Association. The examination is conducted during the last session of the course. Prerequisite: Journeyman plumber, engineer, manufacturer's agent, owner of a device or employee of same.

PPGS 907 Domestic Gas Appliance Servicing (30 hours) — Designed for persons involved in the repair or maintenance of domestic gas appliances. The course reviews atmospheric gas burners; orifice sizing relating to domestic gas ranges, dryers and refrigerators, and the regulations governing these appliances. After successful completion, students may challenge the B.C. Gas Safety Branch examination for a Domestic Appliance Service license. Course is theory only. Prerequisite: Students must have a working knowledge of the trade.

PPGS 908 R.V. Propane Appliance Installation and Servicing (60 hours) — This course is a requirement of the Ministry of Municipal Affairs Gas Safety Branch for students wishing to write the examination to qualify for the Recreational Vehicle License. Topics include the study of propane gas, laws and regulations, piping materials and methods, sizing, burners and pilots, combustion, flame safety and valves.

PPGS 909 Gas Fitter B License (80 hours) — This course is a requirement of the Ministry of Municipal Affairs Gas Safety Branch for students wishing to write the examination to qualify for the Gas Fitter B License. Comprehensive instruction is provided in the history and types of gas; laws; piping materials, methods and sizing; atmospheric and other burners and pilots; combustion; flame safety; venting; regulations; valves; electricity; domestic and commercial appliances. Instruction is both theoretical and practical. Prerequisite: A minimum four years experience in the trade. To become eligible to write the exam, approval from the Gas Safety Branch of the Ministry of Municipal Affairs is required, and recommended *before you enroll.*

PPGS 910 Gas Fitter A License (132 hours) — This course is a requirement of the Ministry of Municipal Affairs Gas Safety Branch for students wishing to write the examination to qualify for the Gas Fitter A License. Comprehensive instruction is provided in pipe and valve sizing; purging and cleaning; pressure regulations and meters; manifolds; flame safety; control systems; all types of burners; appliances; venting; combustion air and ventilation; start-up procedures; standby fuels; direct fired make-up air and regulations; combustion analysis; cathodic protection and input calculations on high-pressure meters. Instruction is both theoretical and practical. Prerequisite: Possession of a valid Gas Fitter B License for two years. To become eligible to write the exam, approval from the Gas Safety Branch of the Ministry of Municipal Affairs is required, and recommended *before you enroll.*

PPGS 911 Gas Fitter A License: Math and Science (36 hours) — Designed for those needing a review of the mathematics and science requirements necessary for the Gas Fitter A License. The course covers algebra, formulas, electricity and chemistry. Students should complete this course before taking PPGS 910.

PPGS 915 Plastic Pipe Fusion for Gas Fitters (7 hours) — Students are trained to use specialized equipment in the joining of polyethylene pipe in this short, intensive course. Designed to upgrade gas fitters and others who work with plastic pipe. Instruction covers the knowledge and skills necessary to operate and maintain the equipment used in the fusion of plastic pipe. Students will understand the special procedures for different piping products and how they vary with weather and temperature changes.

PPGS 917 Plumbing: Residential (18 hours) — This general interest course will appeal to homeowners with do-it-yourself aptitude and provides sufficient skills for students to make simple repairs and renovations to their house plumbing. Topics include drainage systems, water systems, fixture selection and installation. The course is primarily hands-on training.

PPGS 918 Gas Venting License (18 hours) — This course is a requirement of the Ministry of Municipal Affairs Gas Safety Branch for those wishing to write the examination for the Gas Venting License. The course reviews the necessary requirements for sizing and installing gas vents.

PPGS 919 Plumbing Trade Qualification Refresher (60 hours) — For tradespersons preparing for the Provincial Plumbing Trade

Qualification Examination, and for those wanting a current review. Theoretical instruction is given in trade math and science; piping materials; valves, fittings and supports; rigging; pumps; water supply and distribution; blueprint reading; hot water heating systems; maintenance and repair; finishing; roughing-in; draining, venting and sewage; cross connection control and the B.C. Plumbing Code. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

PPGS 920 1985 BC Plumbing Code Upgrading (24 hours) — Designed for apprentices, journeymen, estimators and those working in the trade. The course focuses on the identification and understanding of major changes introduced in the 1985 B.C. Plumbing Code.

PPGS 921 Plumbing Estimating (30 hours) — Designed for plumbers, supervisors and contractors who are required to complete accurate cost estimates. The course provides a review of blueprint reading, basic mathematics, plumbing take-offs and labor estimates. After completing this course, students will be able to prepare accurate and competitive bids for residential and light commercial projects. Prerequisite: Students must have a sound understanding of plumbing theory and procedures.

PPGS 925 Propane Tank Filler Certification (7 hours) — Developed for dispensing personnel, the course covers the physical properties of propane, sources and users, equipment, filling procedures for motor fuel tanks and cylinders, and cylinder re-examination. After completing the course, students receive a certificate from the Propane Gas Association of Canada in compliance with provincial regulations.

UPHOLSTERY TRADE

Course Descriptions

UPHL 961 Upholstery Furniture Basic (36 hours) — Practical hands-on training and instruction in furniture upholstery will provide students with basic skills and knowledge to complete an individual shop project. Cutting, sewing, webbing, fabric selection and the upholstery of old furniture is taught in a fully equipped shop with individual work areas. This course is suitable for those persons who are considering full-time training at BCIT in custom upholstery and furniture finishing.

UPHL 962 Auto Upholstery Basic (36 hours) — Practical hands-on training and instruction in auto upholstery will provide students with basic skills and knowledge to complete an individual shop project. Cutting, sewing, webbing and fabric selection is taught in a fully equipped shop with individual work areas. This course is suitable for those persons who are considering full-time training at BCIT in auto upholstery.

UPHL 963 Upholstery Boat Top (36 hours) — A practical hands-on course in the design, layout, construction and installation of vinyl boat tops. Boat owners, upholsterers and marine maintenance personnel will have the opportunity to complete an individual project during this Saturday morning class. Shop projects will be coordinated by the instructor after the first session. Boats must be trailered to and from the shop each session.

ELECTRICAL TRADES

Appliance Repair
Computers for Trades
Electrical
Electronics
Refrigeration

Dennis Duffey, Associate Dean
Telephone: 432-8222
Jeff Skosnik, Ph.D., Program Head
Telephone: 432-8216
Program Advisor
Telephone: 432-8467

APPLIANCE REPAIR TRADE

Course Descriptions

TAPR 901 Appliance Repair 1 (30 hours) — The first of four courses in the appliance service program (covers most major household appliances and microwave ovens). TAPR 901 covers the fundamentals of electricity as it applies to household appliances. Topics include electrical safety, resistance, voltage, current, inductance, capacitance, magnetism and electrical laws. Hands-on training with multimeters and laboratory circuits provides a practical foundation for classroom lectures. After successfully completing this program, students receive a certificate of completion in "Appliance Repair".

TAPR 903 Appliance Repair 2 (30 hours) — Course focuses on the construction and function of the most common electronic circuits in household appliances. Students build voltage regulators and do sufficient lab work to give them a working knowledge of diodes, zeners, transistors, LEDs and regulators. Prerequisite: TAPR 901 or equivalent.

TAPR 905 Appliance Repair 3 (30 hours) — Applies the circuit knowledge gained in TAPR 901 and TAPR 903 to major household appliances. Topics include reading schematics; appliance circuitry and mechanical systems; ranges, including self-cleaning systems; dryers with standard and electronic control; dishwashers; laundry circuits, including timers and mechanical systems; customer relations. After successfully completing this course, students will be able to work safely on most major household appliances (except for refrigerators), and analyze and correct most common faults; a certificate of completion in "Appliance Repair" is issued to the graduates. Prerequisite: TAPR 903 or equivalent.

TAPR 907 Appliance Repair 4 (30 hours) — For those with a background in basic electricity and electronics, this is a complete course in microwave ovens, covering both new and old designs. Students learn to diagnose and correct all common faults in microwave ovens. Topics include: microwave generation, biological effects of microwave radiation on food, advantages/disadvantages of microwave ovens, automatic cooking, convection ovens, space-saver ovens, customer protection and technician safety, transformers, high voltage, motors, timers, overheat devices. Prerequisite: TAPR 905 or equivalent.

COMPUTERS FOR TRADES

Course Descriptions

TCMP 911 Microcomputer Systems Maintenance 1 (30 hours) — The first of a two-part advanced course for those who have some background in electronics, the ability to use test instruments and are able to read electronic schematics. TCMP 911 reviews analog/digital electronics, basic microcomputer architecture, troubleshooting methodology for sophisticated systems, and hands-on training in advanced uses of test instruments. Students also practice soldering and de-soldering of electronic components. After successfully completing TCMP 911 and 913, students receive a certificate of completion in "Microcomputer Systems Maintenance". Prerequisite: TELX 950 or equivalent.

TCMP 912 Introduction to Electronics for Microcomputers (90 hours) — Designed for students who want to take Microcomputer Systems courses, but who have little or no background in electronics. The course covers DC and AC resistive circuit analysis; capacitor action in DC circuits; fundamentals of AC; use of test equipment, i.e. multimeter and oscilloscope; diode action in DC circuits; rectifiers and power supplies; basic transistors; transistor applications, i.e. transistor switch; logic circuit interface; logic function implementation. Prerequisite: Grade 11 Algebra.

TCMP 913 Microcomputer Systems Maintenance 2 (30 hours) — The knowledge and skill developed in TCMP 911 are applied to the repair of the Apple II computer system series. This course continues teaching maintenance skills with hands-on instruction in the repair of keyboards, disk drives, controllers and monitors. Software diagnostic programs are demonstrated. After successfully completing TCMP 911 and 913, students will have the necessary repair skills for Apple II and related computers, and will receive a certificate of completion in "Microcomputer Systems Maintenance". Prerequisite: TCMP 911 or equivalent.

TCMP 915 Microcomputer Systems Operations and Applications 1 (120 hours) — The first of three courses in this program. Combinational and sequential circuit analysis, design, implementation and troubleshooting are covered, specifically: logic circuit minimization using Boolean algebra; truth tables; circuit implementation using programmable arrays; flip-flop types and applications; latch circuits; counters; shift registers; frequency dividers; digital circuit design. After successfully completing TCMP 915, 917 and 919, a certificate of completion in "Microcomputer Systems Operations and Applications" is issued. Prerequisite: TCMP 912 or equivalent.

TCMP 917 Microcomputer Systems Operations and Applications 2 (120 hours) — A continuation of digital circuit analysis, design, implementation and troubleshooting covered in TCMP 915, specifically: arithmetic circuits, microcomputer memory device types and specifications, memory address decoding, memory subsystem organization, serial data transmission, digital system design. Prerequisite: TCMP 915 or equivalent.

TCMP 919 Microcomputer Systems Operations and Applications 3 (120 hours) — Topics include microcomputer bus structure; microcomputer subsystems; IBM-XT subsystem and circuit analysis; microcomputer troubleshooting and maintenance; MS-DOS operating system use; systems programming in MS-DOS; levels of software; software demonstration. A certificate of completion in "Microcomputer Operations and Applications" is issued to students who successfully complete this course (& TCMP 915/917). Prerequisite: TCMP 917 or equivalent.

TCMP 935 Microcomputer Interfacing (30 hours) — Students apply knowledge gained in TCMP 919 to designing microcomputer circuits for controlling industrial and commercial systems (building security systems, process control systems, laboratory equipment controllers, etc.). Topics include serial and parallel data transmission; serial and parallel ports; ACIA operation and circuit design; software control of microcomputer ports using BASIC. A certificate of attendance in "Microcomputer Interfacing" is issued to students who successfully complete this course. Prerequisite: TCMP 919 or equivalent.

ELECTRICAL TRADE

Course Descriptions

TELC 901 Industrial Power Systems (32 hours) — This is a discussion-only course that reviews basic industrial power systems. Emphasis is on power distribution, instrument transformers and protective relaying. Case histories of typical problems will be analyzed, and students are requested to bring their plant electrical one-line diagrams to class for analysis. Prerequisite: Journeyman level experience and knowledge.

TELC 902 Flow Measurements (32 hours) — This discussion-only course provides students with a good understanding of flow measurement fundamentals, applications and calibrating techniques. Included are basic fundamentals of flow measurement; selection of primary and secondary elements (all types of flow meters); the determination of accuracy requirements in process control systems; calibration and troubleshooting of flow measuring instruments. Prerequisite: Journeyman level experience and knowledge.

TELC 905 Electrical Code 1 (60 hours) — Gives students a good working knowledge of the Canadian Electrical Code (except for high voltage). It prepares students to write either the Class C or Class B Certificate examination. Training is designed to ensure that installation work will meet Canadian standards. Coverage includes the Electrical Safety Act, inspection authorities, contractor responsibilities, approval agencies, examination regulations and requirements. Prerequisite: Knowledge of wiring methods and terminology.

TELC 907 Electrical Code 2 (60 hours) — Training covers all sections of the current electrical code, with particular emphasis on high voltage requirements, to prepare students for writing the Class A Certificate examination. In addition to material in TELC 905, circuit conductors (types, construction, shielding); termination (splicing, stress control, hazardous locations); switch gears (OCB, ACB, load break, horn gap, metal clad, metal enclosed); control and protection (HV fuses, fault current, current relays, ground detection); grounding (high pot test, ground mat, testing methods, equipment); maintenance (substation, vault, transformer, switches); pole construction (overhead line regulations, rigging methods, clearance requirements). Prerequisite: Journeyman level experience and knowledge essential, three-phase and high voltage experience recommended.

TELC 908 Electrical Code: Industrial (32 hours) — This discussion-only course provides students with an understanding of the current edition of the Canadian Electrical Code as it applies to industrial situations. Topics include how the code relates to definitions; types of conductors; grounding and bonding; wiring methods; protection and control; installation of electrical equipment; motors and generators; data processing systems and fibre optic cables. This course is designed as an information package only, not as a refresher course for any trade qualification exam. Prerequisite: Journeyman level experience and knowledge.

TELC 909 Electrical Estimating 1 (12 hours) — An ideal course for electricians who want to know how to estimate electrical work. Basic concepts are taught for the small-to-medium job range:

estimating labor and materials costs, pricing and quotations. Prerequisite: Familiarity with electrical terminology and wiring methods.

TELC 911 Electrical Estimating 2 (20 hours) — A continuation of TELC 909. Fundamentals of commercial and industrial estimating are covered including the analysis of request for quotation and bid documents, materials take-off from prints and schematics, labor costing, and preparation of bid documents. Prerequisite: TELC 909 or equivalent.

TELC 913 Electrical TQ Refresher Part 1 (36 hours) — The first of a two-part program for tradespersons preparing for the Electrical Trade Qualification Examination, and for those wanting a current review. General trade knowledge—meggers, hydrometers, magnetic flux, series parallel circuits, transformers, motors, generators, alternators, motor control—is covered. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

TELC 915 Electrical TQ Refresher Part 2 (36 hours) — A continuation of TELC 913, this course completes the refresher program for the electrical trade. Topics include measuring and test instruments, industrial electronics and the electrical code. Prerequisite: TELC 913 or equivalent.

TELC 919 High Voltage: Basic to Intermediate (45 hours) — A review of essential mechanical and electrical prerequisites: high voltage definition (general, specific, rated levels, BIL); minimum HV terminology (interpretation of meaning, code relationships, causes of effects of HV phenomena, demonstrations and explanations); electrostatic stress (theory and practice); HV cables and conductors (typical HV cables for distribution voltages, essential differences between HV and LV cables, essential differences when terminating, stress reduction principles, voltage ratings and insulation levels); HV cables and terminations (metallic shielding, use/misuse); shield grounding of HV cables through zero-sequence sensors (the correct/incorrect way); potheads and terminators (purpose, applications); fundamentals of HV switches (horn-gap, disconnect, load-break); basic HV fuse knowledge (types, characteristics, applications); distribution switchgear in common use (metal clad, metal enclosed, different features, applications). Prerequisite: Journeyman level of experience and knowledge.

TELC 920 Lighting Basic (30 hours) — Designed for journeymen wiremen in the electrical trade. Upgrades skills in the installation, maintenance and design of electrical lighting systems in common use. Detailed study includes: lighting principles, terminology and standards; common lamp types, their operation and performance; control systems; basic system design and luminaire selection; lighting system installation and Canadian Electrical Code; maintenance and repair of various systems; recent developments in lighting technology, supported by audio-visual materials and demonstration units. Performance objectives include: assembling and connecting fixture components and assessing operation by measurement and observation; light level measuring; connecting and operating control equipment; design problem solving including Electrical Code considerations. The important role of the lighting system in electrical installations, together with the rapid development of new technology in this area, creates the necessity for upgrading electrical journeymen in the field today. Prerequisite: Familiarity with wiring methods and terminology.

TELC 921 Math for Electricians 1 (60 hours) — Prepares students for a career in electrical work. This mathematics upgrade course strengthens students' understanding of basic electrical concepts. Especially recommended to electrical students about to enter their first year of apprenticeship studies in the electrical trade. Coverage includes the fundamental electrical laws and their mathematical expression, algebra refresher, DC electricity and resistive circuit analysis. Prerequisite: Grade 10 Mathematics.

TELC 923 Math for Electricians 2 (60 hours) — Provides students with the mathematical background they need to understand AC electricity. The course is recommended for students about to enter their second year of apprenticeship studies in the electrical trade, and to others who are seeking a thorough understanding of AC principles. Prerequisite: TELC 921 or equivalent.

TELC 925 Math for Electricians 3 (60 hours) — This course is recommended for students about to enter their third year of apprenticeship studies in the electrical trade, and to others interested in an understanding of three-phase circuits and equipment. Topics include Wye and Delta systems, alternators, transformers, and power factor correction. Prerequisite: TELC 923 or equivalent.

TELC 927 Motor Control 1 (30 hours) — A practical, hands-on course covering the basic principles of conventional motor control for those working in industrial settings. Topics include fractional horsepower, starters, magnetic line voltage starters, pilot devices, circuit layout, interpretation and application of schematics, and wiring diagrams. After successfully completing TELC 927 and 928, a certificate of completion in "Motor Control" is issued. Prerequisite: Familiarity with wiring methods and terminology.

TELC 928 Motor Control 2 (30 hours) — A continuation of TELC 927 where three-phase, multispeed controllers; synchronous motor controls; DC controllers; motor drives and programmable controllers are introduced. Ample hands-on training provides students with a solid grasp of motor control principles and industrial applications. After successfully completing this course, students are equipped to install and service motor control circuits. A certificate of completion in "Motor Control" is issued to students who successfully complete this course. Prerequisite: TELC 927 or equivalent.

TELC 929 Residential Wiring 1 (36 hours) — Anyone interested in installing residential wiring or altering existing electrical wiring will find this course extremely helpful. Safe wiring practices, simple circuit design, device installation and the electrical code are covered. Prerequisite: Familiarity with wiring methods and terminology.

TELC 930 Residential Wiring 2 (36 hours) — A continuation of TELC 929 which gives students more lab practice and the opportunity to work on complex electrical circuits. Topics include service grounding, hot tubs, water hazards, code and safety requirements, sizing of service conductors and voltage drops. In many cases, successful students attain a sufficient level of practical understanding and skills to be able to completely wire a new house. Prerequisite: TELC 929 or equivalent.

ELECTRONICS TRADE

Course Descriptions

TELX 919 TV Repair 1 (45 hours) — An introduction to electronics, circuit theory, troubleshooting and repair techniques, with emphasis on TV servicing. Topics include: electronic components, power supplies, testing instruments (analog multimeter, DVM and oscilloscope), basic electronics principles, frequency generator, multivibrator, oscillator, signal mixer ,separator, telecommunications (AM, FM, side bands, antenna and impedance), TV systems and standards, TV block diagram analysis, symptoms and indications, guided repair practice.

TELX 921 TV Repair 2 (45 hours) — A continuation of the circuit knowledge gained in TELX 919 applied to practical service work. Topics include: sync and high voltage circuits, sound systems, video and matrixing circuits, repair procedures, service adjustment, alignment. Prerequisite: TELX 919 or equivalent.

TELX 926 Optic Electronics/Fibre Optics (36 hours) — Covers the theory of fibre optics including laser emission and principles, injection laser diodes (ILDs), optical principles (mirrors, lenses and prisms) and practical systems. Students carry out electronic lab work and terminating of fibre cable. The second part of the course covers optical sensors using advanced pulsing technology to distinguish between ambient light levels. Various sensing heads and logic modules will be discussed and included in the lab work.

TELX 950 Introduction to Electronics (36 hours) — Designed for those with little or no understanding of electrical terms and conventions. Course covers resistance, capacitance, inductance, Ohm's Law, Kirchoff's Laws, simple trigonometry and other subjects basic to the electronics trade. Prerequisite: Grade 10 Mathematics.

TELX 951 Electronics 1: Solid State Devices (36 hours) — The first of a series of industrial electronics courses. This one focuses on diodes, semi-conductor theory, zeners, LEDs, transistors, mosfets, SCRs, triacs, diacs, UJTs and programmable UJTs. A certificate of attendance in "Microprocessors" is issued to students who successfully complete TELX 951, 952, 953, 954 and 955. Prerequisite: TELX 950 or equivalent.

TELX 952 Electronics 2: Digital Techniques 1 (36 hours) — An introduction to binary and BCD number systems and codes, logic gates, truth tables, Boolean algebra, flip flops, counters, shift registers, IC timers and troubleshooting techniques. Students build and test a circuit, then find and correct a fault inserted by the instructor. Prerequisite: TELX 950 or equivalent.

TELX 953 Electronics 3: Digital Techniques 2 (36 hours) — The sequel to TELX 952, this course deals with logic parameters (speed, current drive capabilities, etc.), comparison of types of TTL logic (74S, 74LS, 74ALS, etc.), CMOS, tri-state logic, binary and BCD arithmetic, memory chips and circuits. Prerequisite: TELX 952 or equivalent.

TELX 954 Electronics 4: Microprocessors 1 (36 hours) — Based on the 6800 microprocessor, the course covers microcomputer basics, architecture, addressing modes, branching, computer arithmetic and simple programming in machine language. Prerequisite: TELX 953 or equivalent.

TELX 955 Electronics 5: Microprocessors 2 (36 hours) — A continuation of TELX 954. The course focuses on stack operations, subroutines, input/output (I/O) operations, interrupts and interfacing simple circuits (i.e. displays and switches). A certificate of attendance in "Microprocessors" is issued to students who successfully complete this course (and TELX 954/953/952/951). Prerequisite: TELX 954 or equivalent.

TELX 956 Electronics 6: Microprocessor Interfacing 1 (36 hours) — An introduction to some of the methods used to interface microprocessors to the real world. It covers the peripheral interface adapter, handshaking, A/D and D/A conversions, serial data communications and standard serial conversions. Prerequisite: TELX 955 or equivalent.

TELX 957 Electronics 7: Microprocessor Interfacing 2 (36 hours) — In this sequel to TELX 956, the asynchronous communication adapter, static versus dynamic RAM, dynamic RAM refreshing, ROM, PROM, EPROM, EEROM and programmable timer modules are covered. Prerequisite: TELX 956 or equivalent.

TELX 958 Electronics 8: Microprocessor Applications 1 (32 hours) — An introduction to a few applications of microprocessors, including interfacing and applications of DACs and ADCs, analog signal conditioning, motor control and positioning, and process control. Prerequisite: TELX 957 or equivalent.

TELX 959 Electronics 9: Microprocessor Applications 2 (32 hours) — A continuation of TELX 958, this course focuses on sensors (temperature, optical, etc.) and transducers (position and motion, force and pressure, flow and level); electronic control devices (power drivers, solid-state relays, etc.); DC motors; Stepper motors and control; and phase locked loops. Prerequisite: TELX 958 or equivalent.

TELX 970 Operational Amplifiers (36 hours) — Course covers basic linear amplifier circuits (inverting circuits, non-inverting circuits, summing amplifiers, etc.); non-linear signal processing circuits (comparators, Schmitt triggers, etc.); differentiators and integrators; voltage and current circuits; Norton op-amps and instrumentation amps. Prerequisite: TELX 951 or equivalent.

TELX 981 Programmable Controllers 1 (36 hours) — The first of four that deals with programmable controllers, it provides the fundamental knowledge needed to operate a programmable controller and an overview of the device in industry today. Topics discussed: functional overview advantages over conventional relay systems, hardware requirements, peripheral devices, system operation, introduction to programming and data manipulation. A certificate of completion in "Programmable Controllers" is issued to students who successfully complete TELX 981, 982, 983 and 984. Prerequisite: Industrial wiring experience and familiarity with motor control schematics.

TELX 982 Programmable Controllers 2 (36 hours) — A continuation of TELX 981, this course explores industrial applications and provides hands-on training in programming and systems operation. Instruction covers advanced circuitry, specialized modules, installation, troubleshooting, data manipulation routines, data communications, graphics and diagnostics. Prerequisite: TELX 981 or equivalent.

TELX 983 Programmable Controllers 3 (36 hours) — Students learn to make effective use of programmable controllers and develop the ability to write efficient programs for important industrial applications. Topics include use of cassette loaders; graphics capabilities of the industrial terminal; automatic report generation and diagnostic programming; analog input/output; counters and ASCII files; data highways; small processors; introduction and demonstration of computer-assisted control. Prerequisite: TELX 982 or equivalent.

TELX 984 Programmable Controllers 4 (36 hours) — A continuation of TELX 983. A certificate of completion in "Programmable Controllers" is issued to students who successfully complete this course (and TELX 981/982/983). Prerequisite: TELX 983 or equivalent.

TELX 988 Programmable Controllers 1S (35 hours) — The first of three week-long courses that deal with programmable controllers. The course provides the fundamental knowledge needed to operate a programmable controller and an overview of the device in industry today. Topics discussed: functional overview advantages over conventional relay systems, hardware requirements, number systems used, digital logic, peripheral devices, systems operation, introduction to programming, data manipulation. A certificate of attendance for the "Programmable Controllers Seminar" is issued to students who successfully complete TELX 988, 989 and 990. Prerequisite: Industrial wiring experience and familiarity with motor control schematics.

TELX 989 Programmable Controllers 2S (35 hours) — A continuation of TELX 988, this course explores industrial applications and provides hands-on training in programming and system operation. Topics include: ladder diagram language programming, use of timers and counters, function block language programming. Prerequisite: TELX 988 or equivalent.

TELX 990 Programmable Controllers 3S (35 hours) — Students learn to make effective use of programmable controllers and develop the ability to write efficient programs for important industrial applications. Topics include documenting the system, installation, start-up and maintenance. A certificate of attendance for the "Programmable Controllers Seminar" is issued to students who successfully complete this course (& TELX 988/989). Prerequisite: TELX 989 or equivalent.

REFRIGERATION TRADE

Course Descriptions

TREF 905 Domestic Refrigeration Basic (48 hours) — The first of a three-course program in domestic refrigeration covering all aspects of domestic refrigeration equipment including refrigerators, ice makers and room air-conditioning units. In-depth instruction is provided in all facets of repair and custom installation. TREF 905 covers elementary refrigeration theory and basic electricity as it applies to refrigeration service, magnetism, resistive circuits, inductance, capacitance, split phase inductance motors, temperature measuring scales, pressure and gas laws. Upon successful completion of TREF 905, 907 and 908, a certificate of completion in "Domestic Refrigeration" is issued. Prerequisite: Good mechanical aptitude.

TREF 907 Domestic Refrigeration Intermediate (48 hours) — Extensive hands-on training provides students with the practical skills they need for service work. By building a working refrigerator, students learn the use of such refrigeration tools as compound gauges and vacuum pumps. Topics include tubing connections, fluidic circuits, refrigeration electrical circuits, defrost systems, deep freezes and icemakers, temperature controls and principles of silver soldering. Prerequisite: TREF 905 or equivalent.

TREF 908 Domestic Refrigeration Advanced (48 hours) — This is a hands-on course in the repair and custom installation of room air conditioning units. Students are taught fundamental air conditioning principles, including absolute versus relative humidity, physical units of heat, and the laws governing air flow patterns. These fundamental refrigeration laws are applied to practical problems such as calculating unit size for custom installation. Hands-on instruction is provided for both installation and repair. A certificate of completion in "Domestic Refrigeration" is issued to students who successfully complete this course (and TREF 907/905). Prerequisite: TREF 907 or equivalent.

TREF 913 Commercial Air Conditioning 1 (48 hours) — The first of a four-part program in commercial air conditioning. This course enables students to identify the components of a refrigeration system, explain its function, join copper tubing with flares, sedge, and soft solder/hard solder connections. Upon completion of TREF 913, 915, 916 and 921, a certificate of completion in "Commercial Air Conditioning" is issued.

TREF 915 Commercial Air Conditioning 2 (48 hours) — Enables students to identify and explain the components of a domestic gas furnace and its function, symbols of a basic electrical wiring diagram, and the function of the circuit components. Prerequisite: TREF 913 or equivalent.

TREF 916 Commercial Air Conditioning 3 (48 hours) — Students will be able to troubleshoot electrical control systems; install and adjust thermostats; remove, replace and start up compressors; clean systems. Prerequisite: TREF 915 or equivalent.

TREF 917 Refrigeration TQ Refresher 1 (60 hours) — The first of a two-part program for tradespersons preparing for the Provincial Refrigeration Trade Qualification Examination, and for those wanting a current review. Topics include refrigeration theory, reciprocating compressors, condensers, evaporators, flow control devices and accessories. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended before you enroll.

TREF 919 Refrigeration TQ Refresher 2 (60 hours) — This completes the survey of industrial refrigeration and brings successful students up to trade qualification standards. Topics include ammonia systems, halo carbon systems, capacity modulation and system balance, secondary refrigerants (brines), load calculations, system dehydration, air cleaning equipment, air distribution, automatic control systems, humidifying/ dehumidifying equipment. Prerequisite: TREF 917.

TREF 921 Commercial Air Conditioning: Shop (36 hours) — Students troubleshoot A/C systems for malfunctions and carry out preventive maintenance. The course covers aligning motor and blower pulleys, installing L V controls (TD relays, thermostats, NSB and override controls), lock out relays, identify and replace faulty components in A/C units up to a five-ton capacity. A certificate of completion in "Commercial Air Conditioning" is issued to students who successfully complete this course (and TREF 913/915/916). Prerequisite: TREF 916 or equivalent.

MECHANICAL INDUSTRIES TRAINING

Automotive Mechanic
Heavy Duty Mechanic
Machinist
Mathematics for Mechanical Trades
Millwright
Small Engine Mechanic

Ron Evans, B.C.I.D.(Auto), B.C.T.Q., I.P., Associate Dean
Telephone: 432-8202
Program Advisor
Telephone: 432-8467

AUTOMOTIVE MECHANIC TRADE

Terry Fletcher, I.D., T.Q., I.P., Chief Instructor
Telephone: 432-8240
Jim Marchant, I.D., T.Q., I.P, Instructor
Telephone: 432-8240

Course Descriptions

AUTO 900 Automotive Mechanical Repair TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Automotive Mechanical Repair Trade Qualification Examination, and for those wanting a current review. Topics include safety, shop equipment, air conditioning, internal combustion engines (gas and diesel), cooling systems, fuel delivery systems, emission control systems, electrical systems, power train, suspensions, steering and brakes. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

AUTO 902 Introduction to Auto Mechanics (60 hours) — Designed for persons with no formal training in auto mechanics who wish to learn theory and practical skills to enter other related areas (steering, suspension and wheel service, brake service, electrical systems, engine tune-up and air conditioning). The course is also suitable for general enthusiasts who wish to complete minor automotive repairs and systems analysis. The course covers use of hand tools, power tools, hoists, jacks and jack stands; vehicle servicing; tire changing, repairing and balancing; suspension and steering linkage inspection; drum and disc brake servicing; basic ignition and electrical systems; basic power train and engine operation. The course is divided equally between theory, demonstration and shop practice.

AUTO 906 High Performance Auto (30 hours) — For those who wish to learn to modify engine carburetion and achieve high speed performance from a stock engine. Instruction is delivered through a combination of theory, demonstration and hands-on experience and includes design concepts, superchargers, turbochargers, nitrous oxide and other aspects of building American engines into high performance engines. Successful graduates of this course will be able to rebuild the top end of an American engine. They will know how to invest wisely to obtain maximum horsepower and economy from stock engines. The course utilizes off-campus commercial shop facilities for the hands-on training. Prerequisite: Although students need not be journeyed mechanics, a sound understanding of automotive engine theory and operation is required.

AUTO 907 Automotive Tune-up and Electrical (42 hours) — This highly developed course allows students with limited experience to perform automotive tune-ups and electrical testing. Successful graduates will have a working knowledge of tune-up procedures; use of compression gauges; cylinder leak-down testers; voltmeters, ohmmeters and scopes; engine components and operation; lubrication and cooling systems; electrical systems (basic electricity, conventional and electronic ignition operation and servicing); fuel systems (operation of various components including carburetors and fuel pumps, introduction to fuel injection); emission controls (basic components, preventive maintenance); introduction to using common electrical set test equipment and instruments. Emphasis is placed on hands-on instruction. Prerequisite: Familiarity with automotive parts, tools and shop safety.

AUTO 908 Automotive Electrical/Electronics (42 hours) — An advanced course for experienced automotive mechanics specializing in carburetion and advanced tune-up techniques, and supervisors of auto mechanics. The repair and maintenance of electronic components and emission control devices in automobiles is explored. Topics include carburetion, electronic carburetion, fuel injection, turbocharger operation, engine electrical, ignition systems, charging system theory and testing, introduction to the operation and testing of computer controls. After completing this course, students will become proficient in advanced automotive engine diagnosis, troubleshooting and repair. Prerequisite: AUTO 907 or equivalent.

AUTO 909 Electronic Engine Control/Fuel Injection (24 hours) — An advanced course for experienced automotive mechanics specializing in servicing late model, microprocessor-controlled engine and fuel injection systems. Prerequisite: AUTO 908 or equivalent.

AUTO 920 Automotive Air Conditioning (30 hours) — For mechanics who want to increase their job opportunities by acquiring a specialized skill, this course gives them a thorough understanding of automotive air conditioning systems, and the training to service and install these systems according to manufacturers' specifications. The course includes theory of operation; system operation and adjustments; performance tests, repairs and diagnosis; compressor service; introduction to automatic temperature and climate controls. A certificate of completion in "Automotive Air Conditioning" is issued to students who successfully complete this course. Prerequisite: Students should have completed a substantial portion of an apprenticeship or have experience with automotive mechanics.

AUTO 922 Automotive Brake Servicing (30 hours) — For mechanics who require upgrading in brake servicing, or for students seeking employment in this area. The course provides intensive training in hydraulics, friction, dual-piston master cylinders, hoses, quick take-up master cylinders, wheel cylinders, valves, tubing, fluids, brake drums, brake drum assemblies, disc/rotor, disc brake assemblies, parking brakes (propeller shaft and rear axle types), power brakes boosters and A.B.S. operation. After successfully completing this course, students will be able to perform almost any inspection/repair necessary on disc/drum brake assemblies and will receive a certificate of completion in "Automotive Brake Servicing". Prerequisite: A minimum of three years mechanical experience.

AUTO 924 Automotive Front End Alignment (48 hours) — For experienced automotive mechanics who require upgrading in suspension and alignment work, apprentices or students seeking employment in this field. The course takes you through basic angles, to the latest front wheel and 4 x 4 alignment techniques. Topics include front and rear suspension service; the operation/repair of conventional rack and pinion steering. After successfully

completing this course, students will be able to diagnose/service suspension and steering systems, and perform front wheel alignments; a certificate of completion in "Automotive Front End Alignment" is issued.

AUTO 925 Automotive Four Wheel Alignment (6 hours) — A one-day intensive course on late model steering, suspension and alignment techniques. Topics include electronic rack and pinion, four wheel steering, active suspension, and four wheel alignment using the latest computer alignment equipment. The course is scheduled for Saturdays to permit extended shop time.

AUTO 926 Power Train (24 hours) — For students with basic knowledge of the operating principles of the power train. The course starts with a review of the basic operating principles, and culminates with the complete operating and adjusting procedures for most modern drive trains including component purpose and construction; power flow and operation of clutches, manual transmission, transaxles, conventional and anti-spin differentials; pre-removal checks; proper disassembly and assembly procedures; proper procedures to ensure safe and reliable operation. Successful students will be able to diagnose components in the power train, and conventional and anti-spin differentials; inspect components for wear; describe operating principles; adjust components to manual specifications. Prerequisite: Students should be experienced in the trade, or be in the latter half of the apprenticeship program.

AUTO 928 Automotive Automatic Transmissions (48 hours) — An ideal course for automotive mechanics who require upgrading in automatic transmissions, apprentices or mechanics seeking employment in this field. Classroom and shop sessions cover: torque converter design and construction, including centrifugal and hydraulic lockup; planetary gear operation; valve bodies; hydraulic circuits; three- and four-speed transmission operation and overhaul procedures. The operation of computer-controlled electronic automatic transmissions is also discussed. After successful completion of the course, students will be able to trace paths of power in transmissions, diagnose problems and prescribe repair procedures; a certificate of completion in "Automotive Automatic Transmissions" is issued.

AUTO 951 Alternate Fuel Systems for Vehicles (LPG & NGV) (60 hours) — Designed to prepare persons wishing to write the examination to qualify for their CNG and LPG License offered through the Gas Safety Branch. Successful students may seek employment with LPG and NGV conversion centres, service stations, automobile manufacturers, accessories stores, or become self-employed. Topics include safety, basic test equipment, characteristics of LPG and NGV, engine and ignition requirements, LPG and NGV components, installation, refuelling, tune-ups and troubleshooting. The course is scheduled on Saturdays to permit extended shop time. Prerequisite: A minimum of third-year level apprentice mechanic. To become eligible to write the exam, approval from the Gas Safety Branch of the Ministry of Municipal Affairs is required, and recommended *before you enroll.*

AUTO 952 Alternate Fuel Systems Update (12 hours) — An advanced course designed for licensed LPG/NGV mechanics who want an upgrade on the latest equipment and developments in the industry, including the latest European and domestic mixer and regulators, computer-controlled feedback LPG systems, installation procedures on late model microprocessor fuel injected vehicles, and advanced troubleshooting techniques. Prerequisite: LPG/CNG License.

HEAVY DUTY MECHANIC TRADE

Don Eklof, I.D., Diesel Eng.I.P., H.D.I.P., Chief Instructor
Telephone: 432-8241

Course Descriptions

HDMX 901 Heavy Equipment Preventive Maintenance for Owners/Operators (36 hours) — Familiarizes heavy equipment owners/operators with preventive maintenance, and the service and repair techniques used to achieve this. Instruction is provided for various engines, drive trains, hydraulics, steering, brakes, servicing and troubleshooting. Students will be able to diagnose simple problems, recognize the importance of preventive maintenance and apply maintenance procedures to servicing trucks, loaders, backhoes, etc.

HDMX 902 Mobile Hydraulics (48 hours) — For heavy equipment mechanics/operators wanting to upgrade their knowledge of hydraulics for forklifts, front-end loaders and stationary equipment. Students are taught to understand hydraulics, fluids, reservoirs, pumps, motors, valves, hoses and fittings; cylinder accumulators; coolers and schematics; analyze component failures, troubleshoot and perform maintenance diagnostics and testing. Topics include hydraulic principles, fluids and accessories; piping and fittings; pump operation; principles of actuator and valve operations; mobile circuits and schematics; power steering; hydrostatic drives, leaks and seals. Students will be able to analyze component requirements, diagnose failures and prescribe solutions.

HDMX 905 Heavy Duty Mechanic TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Heavy Duty Mechanic Trade Qualification Examination, and for those wanting a current review. Theoretical instruction is given in various types of engines, engine tune-up, electrical systems, hydraulics, brakes, running gear, clutches and torque, transmissions, rear end and winches. Prerequisite: Minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

HDMX 906 Heavy Duty Diesel Engines (48 hours) — Theory consisting of operation, construction and design of diesel engines and their fuel systems, service and maintenance techniques, tune-up procedures and troubleshooting techniques will be covered in the classroom and shop.

HDMX 910 Heavy Duty Electrical Troubleshooting (48 hours) — For heavy duty truck and equipment owners/operators, persons experienced with hydraulic equipment and apprentices to the heavy duty mechanic trade. The course reviews theory, test procedures and troubleshooting techniques of circuits and components related to trucks, buses and heavy duty equipment. Topics include electrical theory, circuits and math; test instruments; batteries, chargers and starters; DC charging systems (generators and regulators); alternators; basic and transistorized ignition systems; automatic shut-down systems on diesel engines; miscellaneous electrical circuits on trucks, buses and heavy equipment. Successful students will understand and be able to troubleshoot problems in heavy duty equipment systems.

HDMX 915 Heavy Duty Transmissions and Differentials (48 hours) — A refresher course for experienced heavy duty mechanics, and an information course for apprentices. The course covers clutches, torque converters, transmissions and differentials. Topics include the operation of planetary transmissions; torque converters; hydraulic pumps and controls; bevel gear differentials; valves and hydro-dynamics. Prerequisite: Students

should have basic knowledge of various types of transmission and differential components and terminology, and work experience in the heavy duty mechanic trade.

HDMX 920 Air Brakes for Drivers (18 hours) — For drivers who plan to write the Provincial Air Brake Endorsement ticket for driving air brake equipped vehicles. While driver training is not provided, driver demonstrations and tips on driving are an important part of the curriculum. Classroom instruction includes an introduction to air brake theory and basic components of air brake systems: warning devices, valves, tractor/trailer operation, troubleshooting and safety.

HDMX 925 Air Brakes for Mechanics (30 hours) — An ideal refresher course for mechanics who have limited experience servicing air brakes, and for owners/operators of trucks/fleets who wish to know more about this braking system. The course includes principles of air brakes; purpose and function of system components; existing air brake schedules and current dual air systems for truck and tractor/trailer units; maintenance, repair and troubleshooting.

HDMX 930 Commercial Transport Mechanic TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Commercial Transport Mechanic Trade Qualification Examination, and for those wanting a current review. Prerequisite: Minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

HDMX 950 Commercial Vehicle Inspector (30 hours) — This course prepares students to write the Provincial Inspectors License Exam. B.C. Ministry of Transportation and Highways curriculum is used. Prerequisite: Either a B.C. Automotive Mechanic TQ, Heavy Duty Mechanic TQ or Commercial Transport Mechanic TQ.

MACHINIST TRADE

Derek Rampling, B.Ed., N.Z.C.E.(Mech), Tool & Die Advanced Trade Cert., Machinist Advanced Trade Cert., Millwright B.C.T.Q., Chief Instructor
Telephone: 432-8214

Course Descriptions

MACH 900 Machinist TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Machinist Trade Qualification Examination, and for those wanting a current review. Theoretical instruction is given on safety; regulations for the use of hand tools; instruments and equipment; blueprint reading; grinders; metal lathes; milling machines; vertical boring and turning machines; horizontal boring, drilling and milling machines; shapers, planers and slotters; power drills and saws. Prerequisite: Minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

MACH 905 Machine Shop Operator 1 (36 hours) — Provides a basic understanding and practical experience in machine shop operation and the safe operation of machine shop equipment. Training is mainly hands-on for the operation of drills, saws and lathes. Students progress according to their capabilities; shop projects are self-paced and sequentially arranged. After successfully completing the course, students may advance to MACH 906.

MACH 906 Machine Shop Operator 2 (36 hours) — Provides practical experience in general machine shop operation, and advanced instruction in the safe operation of milling machines and cylindrical and surface grinders. Students progress according to their capabilities; projects are self-paced and sequentially arranged. After successfully completing this course, students may advance to MACH 907. Prerequisite: MACH 905.

MACH 907 Machine Shop (36 hours) — For students to build up their basic operator skills through intensive, hands-on instruction and shop practice. The course provides an opportunity for new operators to apply practical skills learned in MACH 905/906 to projects that will improve their confidence and proficiency. Recommended to individuals with limited recent shop experience as a primer for advanced machining programs.

MACH 910 Principles of Numerical Control for Machine Shop 1 (48 hours) — Allows machinists to keep current by learning on the latest state-of-the-art computerized equipment. The course examines the operation of a CNC lathe with reference to machining centres as necessary. Topics include: review of basic geometry and trigonometry; terminology and definitions used with CNC; writing and debugging CNC programs; entering programs into machines and editing; setting tool offsets and use of tool nose radius compensation. Extensive use is made of BCIT's six EMCO training machines and the SL3H MORI SEIKI lathe. A certificate of completion in "Principles of Numerical Control for Machine Shop 1" is issued to students who successfully complete this course.

MACH 911 Principles of Numerical Control for Machine Shop 2 (42 hours) — For experienced persons performing machining using CNC. The course emphasizes advanced CNC machine shop operations with student computer boards and CNC training equipment. After successfully completing the course, students will have a sound knowledge of the principles of operating machining equipment by computer. A certificate of completion in "Principles of Numerical Control for Machine Shop 2" is issued to students who successfully complete this course. Prerequisite: MACH 910 or equivalent.

MACH 921 Tool and Die Maker 1 (30 hours) — An exploratory introduction to the theory and skills of a tool and die maker, using current production methods; also a good introduction to MACH 910. Instruction covers jig making, piercing dies, single/double compound and progressive dies. The course, consisting of two-thirds theory, lays a good foundation for the intermediate course which is primarily hands-on. Prerequisite: MACH 907 or equivalent training in machine shop operation/metal fabrication

MACH 922 Tool and Die Maker 2 (48 hours) — An intensive, hands-on course to build students' tool and die maker skills. The course continues with more in-depth instruction in jig making, piercing dies, single/double compound and progressive dies. Students focus on industry requirements for tool and die making, stressing practical production. Students who complete this course successfully will be able to make advanced dies. Prerequisite: MACH 921 or equivalent.

MATHEMATICS FOR MECHANICAL TRADES

Eric Morse, P.Eng., Program Head
Telephone: 432-8638

These courses are specifically for apprentices, pre-apprentices and journeymen in the construction, mechanical and steel trades.

Course Descriptions

TMAT 935 Industrial Mathematics 1 (36 hours) — Arithmetic operations, fractions, decimals, metric systems, ratio and proportion, percentages, area and volume. Prerequisite: Grade 8 Mathematics.

TMAT 936 Industrial Mathematics 2 (36 hours) — Algebra operations, equations and formulas, exponents and logarithms, graphs, trigonometry, trade applications. Prerequisite: TMAT 935.

TMAT 938 Industrial Mathematics 3 (72 hours) — For trades upgrading programs. Systems of equations, phasor algebra, analytical geometry, trigonometric identities, introduction to calculus, trade applications. Prerequisite: TMAT 936 or equivalent.

MILLWRIGHT TRADE

Peter Fill, I.D., T.Q., I.P., Program Coordinator
Telephone: 434-5734 Local 5038

Course Descriptions

MILL 900 Millwright TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Millwright Trade Qualification Examination, and for those wanting a current review. Theoretical instruction is given in general fitting practices; hydraulics, pneumatics and lubrication; material handling; machine components and machine installation. Prerequisite: Students must obtain the "Millwright Manual of Instruction" prior to the course. To become eligible to write the exam, a minimum five years experience in the trade and approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended *before you enroll.*

MILL 902 Industrial Hydraulics Stationary (42 hours) — Designed to assist the maintenance personnel at industrial sites in the testing, repair, examination and troubleshooting of basic fluid power circuits and component parts. Explains and identifies basic fluid power circuitry, components and hydraulic theory. Students are taught principles and practices of reservoirs; fluids and fluid conditioners; conductors and pumps; directional, pressure and flow control; actuators and seals; types of symbols and graphics; circuitry identification and interpretation. Some practical, hands-on work on pumps, valves, actuators and circuits is also included. Successful students become conversant with fluid power and hydraulic theory, and capable of examining, testing, adjusting and repairing basic fluid power components. Prerequisite: Students must obtain Vicker's "Industrial Hydraulics Manual" prior to the course.

MILL 904 Industrial Hydraulics Advanced (30 hours) — Instruction covers troubleshooting duties; skills and aids in developing good work habits; problem-solving using senses; a systematic approach; mathematical formula/calculations. The need for planned maintenance and its benefits are also examined. The course is 90% hands-on training. Successful students are able to perform hydraulics troubleshooting on both stationary and mobile equipment. Of benefit to mechanics, equipment installers and trade specialists such as millwrights or machinists. Prerequisite: MILL 902 or related trade experience.

MILL 910 Machine and Coupling Alignment (36 hours) — Designed to cover the theory and practice of coupling alignment using state-of-the-art devices including laser optical devices. Specific methods covered are: face and rim alignment, reverse dialling, face-to-face method, laser aligning method. Analysis and corrections are performed by calculations, graphical solutions and the use of computers. Prerequisite: A working knowledge of basic machinery and components.

SMALL ENGINE MECHANIC

Doug Singel, I.D., Chief Instructor
Telephone: 432-8460

Course Descriptions

SENG 900 Small Engine Powered Equipment Maintenance (48 hours) — This course covers the maintenance and general repair of engines and allied equipment on lawn mowers, chain saws, generator units and other utilities powered by air cooled two- and four-stroke engines. Hands-on practical shop training is emphasized.

SENG 910 Owner/Operator Motorcycle Maintenance (48 hours) — Provides motorcycle owners and enthusiasts with basic tune-up and preventative maintenance techniques. Theory includes basic engine operation and design; ignition and carburetion systems. Maintenance and tune-up procedures involve timing and carburetion adjustment, brakes, tires, final drives, lubrication, chassis and electrical system service. Course content is divided equally between theory, demonstration and shop practice. Prerequisite: Students must be familiar with correct hand tool operation and shop safety.

SENG 920 Outboard Motor Maintenance (48 hours) — Provides tune-up and preventive maintenance skills including theory, demonstration and hands-on shop practice. Theory includes basic two-cycle operation, ignition, carburetion and gearcase systems. Prerequisite: Students must be familiar with correct hand tool operation and shop safety.

SENG 921 Marine Stern Drive Maintenance (48 hours) — Provides stern drive owners with basic tune-up and preventive maintenance skills. The course includes theory, demonstration and hands-on shop practice. Theory includes basic four-cycle engine operation, ignition, carburetion and outdrive systems. Prerequisite: Students must be familiar with correct hand tool operation and shop safety.

METAL INDUSTRIES TRAINING

Sheet Metal
Steel
Welding

Mike Cannell, Associate Dean
Telephone: 434-5734 Local 5003
Program Advisor
Telephone: 432-8467

SHEET METAL TRADE

Gord Bradbury, Chief Instructor, Sheet Metal
Telephone: 432-8242

Course Description

STEL 920 Sheet Metal (36 hours) — An introductory sheet metal fabrication course for individuals currently working in sheet metal shops, or for those interested in working in this field. The course includes basic blueprint reading, simple layout, shop calculations, soldering and brazing.

STEEL TRADE

Gary Blidook, Chief Instructor, Steel Fabrication
Telephone: 434-5734 Local 5005

Course Descriptions

STEL 900 Steel Fabrication TQ Refresher (60 hours) — For tradespersons preparing for the Provincial Steel Fabrication Trade Qualification Examination, and for those wanting a current review. Prerequisite: A minimum five years experience in the trade. To become eligible to write the exam, approval from the Ministry of Advanced Education and Job Training area office nearest your residence is required, and recommended before you enroll.

STEL 909 Steel Fabrication (60 hours) — Reviews basic theoretical and practical requirements of steel fabrication. The course focuses on mathematics, pattern development, blueprint reading, welding and the proper use of industrial machines. It also provides students with the opportunity to follow a typical steel fabrication project from initial design to shop production. After completing this course, students are eligible to apply for credit transfer approval to the Steel Fabrication Entry Level Trades Training Program.

STEL 911 Steel Fabrication Estimating (36 hours) — Offers those with a practical background in steel fabrication a basic understanding of steel fabrication estimating. The course covers all phases, from material take-off, to the erection of a project. Students will learn how to develop plans and specifications; complete material take-off; project material costs; understand pricing and labor costs; and maintain costing records. Several estimating projects will be assigned to provide industry experience in steel fabrication estimating. Prerequisite: A working knowledge of steel fabrication, ability to read blueprints and basic math.

STEL 913 Steel Fabrication: Plate and Pipe Development (30 hours) — Designed to upgrade a tradesperson's skills for advanced projects and pattern layout. The course covers the various methods of plate and pipe development for steel fabrication, focusing on fabricating and using templates to shear, burn, form and tack plates together (to make an elbow and a square to round). Prerequisite: STEL 909 or equivalent.

STEL 920 Sheet Metal (36 hours) — An introductory sheet metal fabrication course for individuals currently working in sheet metal shops, or for those interested in working in this field. The course includes basic blueprint reading, simple layout, shop calculations, soldering and brazing.

STWD 901 Blueprint Reading for Welding and Steel Fabrication Basic (30 hours) — Designed to upgrade a tradesperson's skills and job opportunities. Training covers all aspects of blueprint reading as it applies to fabrication, from learning how to read fairly complicated structural drawings, to selecting appropriate layout techniques for materials used to complete a structure. Prerequisite: Some knowledge of steel fabrication.

STWD 902 Blueprint Reading for Welding and Steel Fabrication Advanced (24 hours) — A continuation of STWD 901. The course is designed to further improve a tradesperson's skills and employability by dealing with more complicated aspects of layout. Prerequisite: STWD 901 or equivalent.

STWD 923 General Rigging for the Trades (24 hours) — Designed for individuals with limited rigging and signaling experience. Course focuses on identifying limitations of conventional, mobile and tower cranes; directing crane operators under a variety of hoisting conditions; calculating safe workloads for lifting devices; inspecting slings and accessories for wear; tying knots; and evaluating correct rigging, lifting and transportation procedures.

WELDING TRADE

Larry Cox, Chief Instructor, Welding
Telephone: 434-5734 Local 5004

Course Descriptions

STWD 901 Blueprint Reading for Welding and Steel Fabrication Basic (30 hours) — Designed to upgrade a tradesperson's skills and job opportunities. Training covers all aspects of blueprint reading as it applies to fabrication, from learning how to read fairly complicated structural drawings, to selecting appropriate layout techniques for materials used to complete a structure. Prerequisite: Some knowledge of steel fabrication.

STWD 902 Blueprint Reading for Welding and Steel Fabrication Advanced (24 hours) — A continuation of STWD 901. The course is designed to further improve a tradesperson's skills and employability by dealing with more complicated aspects of layout. Prerequisite: STWD 901.

STWD 923 General Rigging for the Trades (24 hours) — Designed for individuals with limited rigging and signaling experience. Course focuses on identifying limitations of conventional, mobile and tower cranes; directing crane operators under a variety of hoisting conditions; calculating safe workloads for lifting devices; inspecting slings and accessories for wear; tying knots; and evaluating correct rigging, lifting and transportation procedures.

WELD 900 Welder Inter-provincial Red Seal Refresher (30 hours) — A theory course designed to prepare welders for the Inter- provincial Red Seal exam; or for the Level C, Level B and Level A exams of the Welder Registration Program. Prerequisite: Level A or Level B Welder Registration and a minimum of four years welding experience to write the Inter-provincial Red Seal

Examination; 24 months welding experience for Level C Welder Registration; 36 months welding experience for Level B; and 48 months welding experience for Level A. To become eligible to write the exams, approval from the Apprenticeship and Employment Training Division (nearest your residence) of the Ministry of Advanced Education and Job Training is required, and recommended *before you enroll.*

WELD 903 Oxyacetylene Welding: Braze Welding (36 hours) — A basic fuel gas welding course for beginners. The course includes safety, shop practices, procedures and operation of related equipment. After completing this course, students will be eligible to apply for credit transfer approval to P3 Module (gas welding and braze welding) of the Level C Welding Program.

WELD 904 Oxyfuel Cutting: Flame Cutting (24 hours) — A flame cutting course for individuals who are required to use this process in the workplace; also for those wanting to learn basic arc welding. Course includes safety, shop practices, procedures and operation of flame cutting equipment. After completing this course, students will be eligible to apply for credit transfer approval to P2 Module (oxyfuel gas cutting) of the Level C Welding Program.

WELD 915 Shielded Metal Arc Welding Basic (42 hours) — A basic arc welding course for the individual who wishes to learn S.M.A.W. to trade standards. The course deals with the use of stick electrodes to weld multi-positional fillet and groove welds. After completing this course, students will be eligible to apply for credit transfer approval to P4 Module (SMAW) of the Level C Welding Program.

WELD 941 Gas Tungsten Arc Welding Basic (30 hours) — An introductory course covering the shielding gases, electrodes, equipment, procedures and practical applications (in the flat, horizontal and vertical positions) of G.T.A.W. After completing this course, students may transfer into the intermediate level of G.T.A.W. (WELD 942).

WELD 942 Gas Tungsten Arc Welding Intermediate (30 hours) — This level covers welding aluminum and stainless steel in the flat, horizontal and vertical positions and the use of flux and inert gas for back purging. After completing this course, students are eligible to apply for credit transfer approval to P10 Module (GTAW) of the Level B Welding Program. Prerequisite: WELD 941.

WELD 943 Gas Tungsten Arc Welding Advanced (30 hours) — A course for individuals wanting additional training in G.T.A.W. The course includes "freehand" and "walking the cup" methods of welding; pipe welding with mild steel and stainless steel filler wires; and welding in the 2G, 5G and 6G positions while back purging with inert gas. After completing this course, students are eligible to apply for credit transfer approval to P12 Module (GTAW 2) of the Level A Welding Program. Prerequisite: WELD 942.

WELD 950 Plasma Arc Cutting (18 hours) — An introduction to thermal cutting used in industry.

WELD 953 Submerged Arc Welding (18 hours) — Shop-related welding using the Submerged Arc Welding process.

WELD 956 Automated Welding Systems (24 hours) — Includes automatic/semi-automatic Flux Cored Arc Welding and Gas Tungsten Arc Welding, including theory and demonstrations.

Index

RON HYDE

CERTIFICATES OF COMPLETION - 886 TERM	Total Hours	CRN #	Prerequisites	Crse End	Pass Mark	Contact Person
Productivity Improvement for Supervisors	30	N/A	**ADMN 930** Productivity Improvement for Supervisors	N/A	50%	Barney Morrow
Instructional Skills	36	13323	**ADMN 931** Instructional Skills	Sep. 30/88	70%	(5805)
Instructional Skills	36	13337	**ADMN 931** Instructional Skills	Oct. 28/88	70%	"
Instructional Skills	36	13346	**ADMN 931** Instructional Skills	Nov. 25/88	70%	"
Automotive Electronic and Computer Controls	42	94345	**AUTO 908** Automotive Electronic and Computer Controls (& AUTO 907)	Nov. 3/88	S	Ron Evans
Electronic Engine Controls and Fuel Injection	24	01065	**AUTO 909** Electronic Engine Controls and Fuel Injection (& AUTO 908)	Dec. 8/88	S	(8202)
Automotive Air Conditioning	36	94362	**AUTO 920** Automotive Air Conditioning	Nov. 9/88	S	"
Automotive Brake Servicing	30	94377	**AUTO 922** Automotive Brake Servicing	Oct. 19/88	S	"
Automotive Front End Alignment	42	94386	**AUTO 924** Automotive Front End Alignment	Nov. 10/88	S	"
Automotive Automatic Transmissions	48	94390	**AUTO 928** Automotive Automatic Transmissions	Nov. 10/88	S	"
Canned Foods: Thermal Processing and Container Evaluation	30	N/A	**BISC 903** Canned Foods: Thermal Processing & Container Evaluation	N/A	70%	Ron Hyde
Dairy Processing 1	30	N/A	**BISC 908** Dairy Processing 1 (& BISC 907)	N/A	50%	(8887)
Dairy Processing 2	36	N/A	**BISC 909** Dairy Processing 2 (& BISC 908)	N/A	50%	"
Blueprint Reading for Construction	35	06308	**CARP 905** Blueprint Reading for Construction	Nov. 26/88	S	Kal Klasen
Construction Supervision and Project Management	48	06359	**CARP 915** Construction Supervision and Project Management	Nov. 16/88	S	(8556)
Transit and Level	21	06405	**CARP 937** Transit and Level: Basic	Nov. 19/88	S	"
Computer Aided Manufacture	108	N/A	**CDCM 303** Computer Aided Manufacture (& CDCM 311 & ELEC 470)	N/A	50%	Ron Sterne
Intergraph 3-D CAD Drafting	108	N/A	**CDCM 311** Intergraph 3-D CAD Drafting (& CDCM 213/214)	N/A	50%	(8651)
Computer Numerical Control	32	N/A	**CDCM 907** Computer Numerical Control (Industry Service Course)	N/A	S	"
Drafting	84	86721	**DRFT 903** Drafting: Advanced (& DRFT 901)	Nov. 9/88	S	Kal Klasen
Professional Floristry Design	48	87600	**HRTC 901** Professional Floristry Design	Nov.9/88	S	Ron Hyde
Principles of Numerical Control for Machine Shop 1	48	06042	**MACH 910** Principles of Numerical Control for Machine Shop 1	Nov. 10/88	S	Ron Evans
Principles of Numerical Control for Machine Shop 2	42	06253	**MACH 911** Principles of Numerical Control for Machine Shop 2 (& MACH 910)	Dec. 17/88	S	(8202)
Principles of Numerical Control for Machine Shop 3	42	14961	**MACH 912** Principles of Numerical Control for Machine Shop 3 (& MACH 911)	Nov. 7/88	S	"
Professional Sign Painting	240	06623	**PDEC 952** Sign Painting: Basic to Advance	Dec. 2/88	S	Kal Klasen
Sign Painting	96	06646	**PDEC 959** Sign Painting: Upgrade (& PDEC 957)	Nov. 12/88	S	(8556)
Industrial Spray Finishing: Painting	120	14955	**PDEC 960** Industrial Spray Finishing: Painting (Industry Service Course)	Nov. 17/88	S	"
Appliance Repair	120	N/A	**TAPR 907** Appliance Repair 4 (& TAPR 905)	N/A	S	Dennis Duffey
Microcomputer Systems Maintenance	60	91059	**TCMP 913** Microcomputer Systems Maintenance 2 (& TCMP 911)	Nov. 24/88	S	(8222)
Microcomputer Systems Operations and Applications	360	91086	**TCMP 919** Microcomputer Systems Operations & Applications 3 (& TCMP 917)	Dec. 23/88	S	"
Motor Control	60	91118	**TELC 928** Motor Control 2 (& TELC 927)	Dec. 5/88	S	"
T.V. Repair	135	N/A	**TELX 921** T.V. Repair 2 (& TELX 919)	N/A	S	"
Programmable Controllers	144	N/A	**TELX 984** Programmable Controllers 4 (& TELX 983)	N/A	S	"
Domestic Refrigeration	135	N/A	**TREF 908** Domestic Refrigeration 3 (& TREF 907)	N/A	S	"
Commercial Air Conditioning	144	94510	**TREF 921** Commercial Air Conditioning - Shop (& TREF 916)	Dec. 10/88	S	"

CERTIFICATES OF ATTENDANCE - 886 TERM	Total Hours	CRN #	Prerequisites	Crse End	Pass Mark	Contact Person
Supervision/Effective Leadership	16	13358	**ADMN 929** Supervision/Effective Leadership	Sep. 13/88	S	Barney Morrow
Supervision/Effective Leadership	16	13360	**ADMN 929** Supervision/Effective Leadership	Sep. 20/88	S	"
Supervision/Effective Leadership	16	13371	**ADMN 929** Supervision/Effective Leadership	Oct. 4/88	S	"
Supervision/Effective Leadership	16	13385	**ADMN 929** Supervision/Effective Leadership	Oct. 7/88	S	"
Supervision/Effective Leadership	16	13392	**ADMN 929** Supervision/Effective Leadership	Oct.18/88	S	"
Supervision/Effective Leadership	16	13406	**ADMN 929** Supervision/Effective Leadership	Oct. 21/88	S	"
Supervision/Effective Leadership	16	13419	**ADMN 929** Supervision/Effective Leadership	Nov. 2/88	S	"
Supervision/Effective Leadership	16	13422	**ADMN 929** Supervision/Effective Leadership	Nov.8/88	S	"
Supervision/Effective Leadership	16	13435	**ADMN 929** Supervision/Effective Leadership	Nov. 15/88	S	"
Supervision/Effective Leadership	16	13441	**ADMN 929** Supervision/Effective Leadership	Dec. 6/88	S	"
Supervision/Effective Leadership	16	13453	**ADMN 929** Supervision/Effective Leadership	Dec. 9/88	S	"
Computerized Suspension	08	N/A	**AUTO 923** Computerized Suspension Update	N/A	S	Ron Evans
Basic Food Technology	63	N/A	**BISC 902** Basic Food Technology	N/A	X	Ron Hyde
Framing, Roofing and Layout	32	06377	**CARP 921** Framing, Roofing and Layout	Oct. 29/88	S	Kal Klasen
Pulp and Paper Technology: Summer Institute	40	N/A	**CHSC 901** Pulp and Paper Technology: Summer Institute	N/A	X	Ron Hyde
Plant Identification	24	87666	**HRTC 911** Plant Identification	Oct.13/88	S	"
Microcomputer Interfacing	30	N/A	**TCMP 935** Microcomputer Interfacing	N/A	S	Dennis Duffey
Microprocessors	180	61095	**TELX 955** Electronics 5: Microprocessors 2 (& TELX 951/952/953/954)	Dec. 8/88	S	(8222)
Programmable Controllers Seminar	105	01845	**TELX 990** Programmable Controllers 3S (& TELX 988/989)	Oct. 7/88	S	"

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