Continuing Education 1986-87 Calendar

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

President's Message

The British Columbia Institute of Technology is on the threshold of an exciting new future, one which many of you hopefully will wish to share.

On April 1 1986, the well known and respected Pacific Vocational Institute and former British Columbia Institute of Technology were amalgamated as part of a long range plan by the provincial government to strengthen technological development. The new institute — BCIT — has been given a mandate to expand and revitalize its program profile, and to forge partnerships in training for British Columbians.

BCIT now offers a wide range of programs through the Schools of Health Sciences, Management Studies, Academic and Vocational Studies, Construction and Natural Resource Studies and Computing and Electro-Mechanical Studies. Links between these programs and to other institutions will enable us to offer a network of training opportunities to individuals desiring to develop careers that keep pace with the changing technological needs of today's work place.

We are forging partnerships in training with industry for apprenticeship and journeyman training and for co-op education, with universities for research and technological transfer and with colleges for post diploma programs. Over the coming months, we also plan to create an environment at BCIT where applied research can benefit our faculty and students as well as the businesses and industries we serve. With these ambitions, BCIT will become like no other learning institution — a unique experience from start to finish for all those who choose our programs. Opening this calendar may be, for you, the beginning of that unique experience.

Roy Murray

ROY V. MURRAY,
P.Eng.,
President

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Changes in Curricula and Regulations

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.

Contents

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
   434-1610

   Office Hours — 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)

   Consult our advertising supplements for details of special evening opening hours.

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. Maple Ridge — Trades courses and programs only

   Box 3000 (248th Street)
   Maple Ridge, B.C.
   V2X 8L3
   462-7131

5. Sea Island — Trades Avionics courses and programs only

   Vancouver International Airport (South)
   4440 Stark Street
   Richmond, B.C.
   V7B 1A1

Personal Data

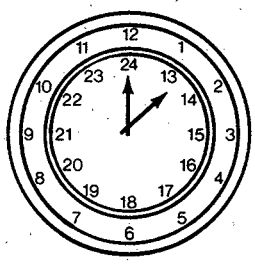
It is the student's responsibility to ensure all personal data on file with the Registrar's Office is accurate.

Refund Deadline

It is the student's responsibility to check the refund deadline dates. This information may be obtained at the information or registration areas in the Registrar's Office.

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

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

3. 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.

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

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

6. 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.

7. 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 than 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 his department head, stating the cause of absence. Special regulations governing attendance in clinical experience areas are prescribed by the School of Health Sciences.

Academic and Administrative Personnel

R.V. Murray, C.D., B.Eng., M.Eng., P.Eng., President
D.J. Svetic, P.Eng., Vice President, Education
D.M. Macpherson, C.A., Vice President, Finance
L.T. McNeely, R.I.A., Vice President, Administration
P.W. Jones, Ph.B., Ph.L., Ph.D., Vice President, Student Services and Educational Support
H. Arthur, B.A.(Hons.), M.A., Dean, School of Academic and Vocational Studies
B. Gillespie, B.Sc., M.Sc., Ph.D., Dean, School of Health Sciences Studies
R. Hyde, B.S.A., M.Sc., P.Ag., Dean, School of Construction and Natural Resource Studies
J. Kyle, B.A., M.B.A., Ph.D., Dean, School of Management Studies
R. Sterne, B.A.Sc., P.Eng., Dean, School of Computing and Electro-Mechanical Studies
R. Bell, Director, Personnel/Employee Relations
D. Hickman, MAIBC, FRAIS, Director, Physical Plant
H. Hyde, B.A., M.A., Coordinator, Student Services
B. Copping, M.D., B.Sc., M.Sc., Director, Medical Services
P. Pick, B.A., M.L.S., Institute Librarian
J. Mitchell, Director, Recreation and Athletic Services
R. Curtis, B.Comm., M.B.A., R.I.A., Director, Learning Resources
G. Lloyd, B.Sc., Director of Development
N. Andrew, C.G.A., Director, Financial Services
W. Hepple, Director, Material Management
V. Karpinsky, B.A.(Hons.), Director, Student Housing
I. Nash, B.A., M.A., Manager, Bookstore
M. Mazziotti, Dipl.T., Registrar

Board of Governors

As of June 1985 the following members have been appointed as members and constitute the Board of Governors:

Chairman:
Malcolm C.J. Wickson, B.Comm., LL.B.
President
Mal-Cam Properties

Vice-Chairman:
Fleming Sondergaard
General Manager
Collins Manufacturing

Rose-Mary L. Basham, B.A., LL.B.
Partner, Mawhinney & Kellough
Barristers and Solicitors

Kenneth Frederick Harding
Secretary-Treasurer
Whillis-Harding Insurance Agencies Ltd.

Thomas Edward Kisling
President
Kisling Consulting Ltd.

James L. McPherson, F.C.A.

Frederick George Randall
Business Manager
International Union of Operating Engineers

Thomas A. Simons, P.Eng.
President
H.A. Simons (International) Ltd.
Consulting Engineers

Edward J. Sirney
Sirney & Son Stone Masonry Contractors Ltd.

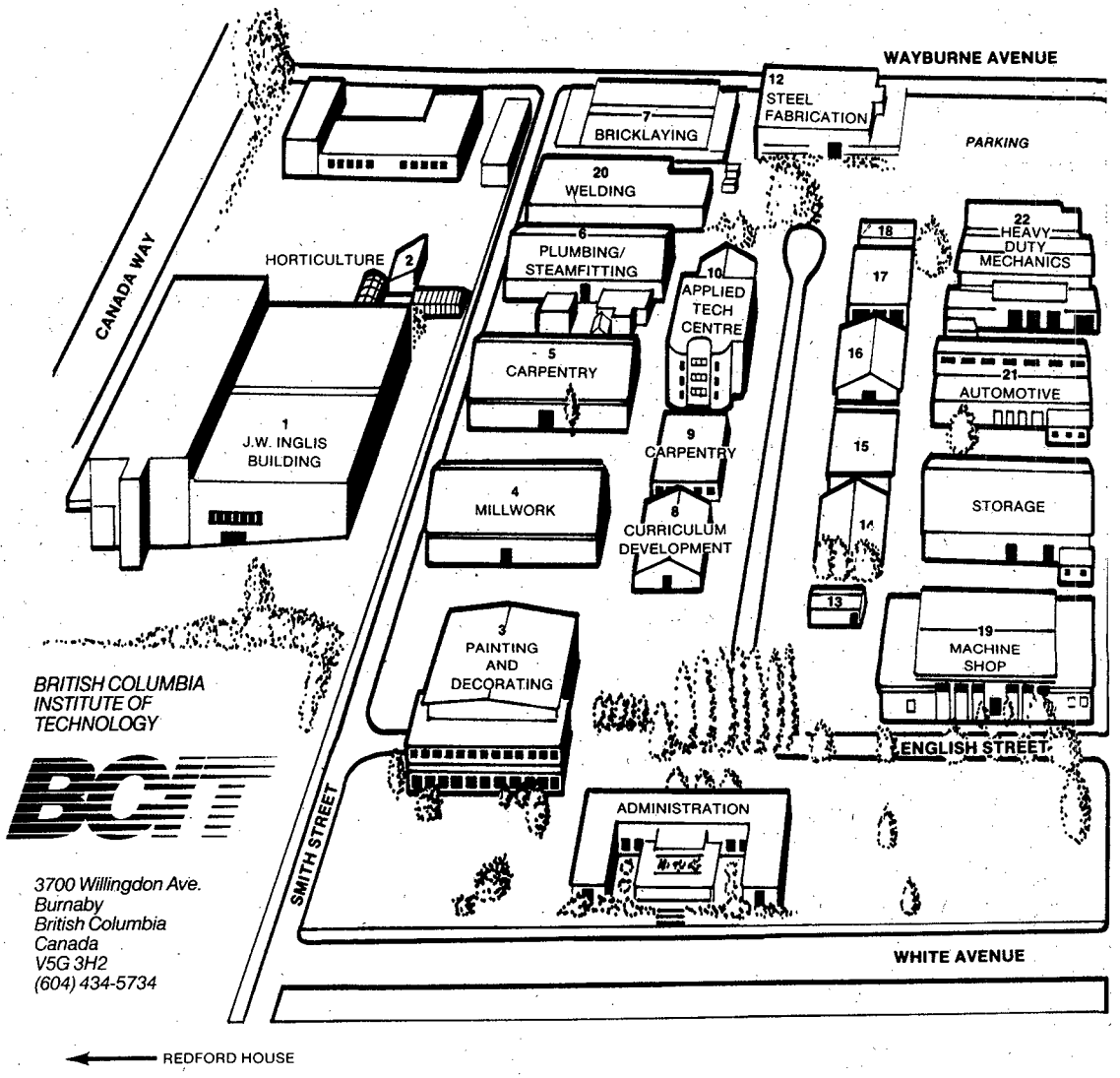
Vinod Sood, B.Sc., C.A.
President and Chief Executive Officer
Finning Tractor & Equipment Company Limited

Carole Taylor, B.A.
CKNW

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

Keith Yorston
Chairman
Q.M. Industries Limited

Secretary to the Board:
Patricia Maertz



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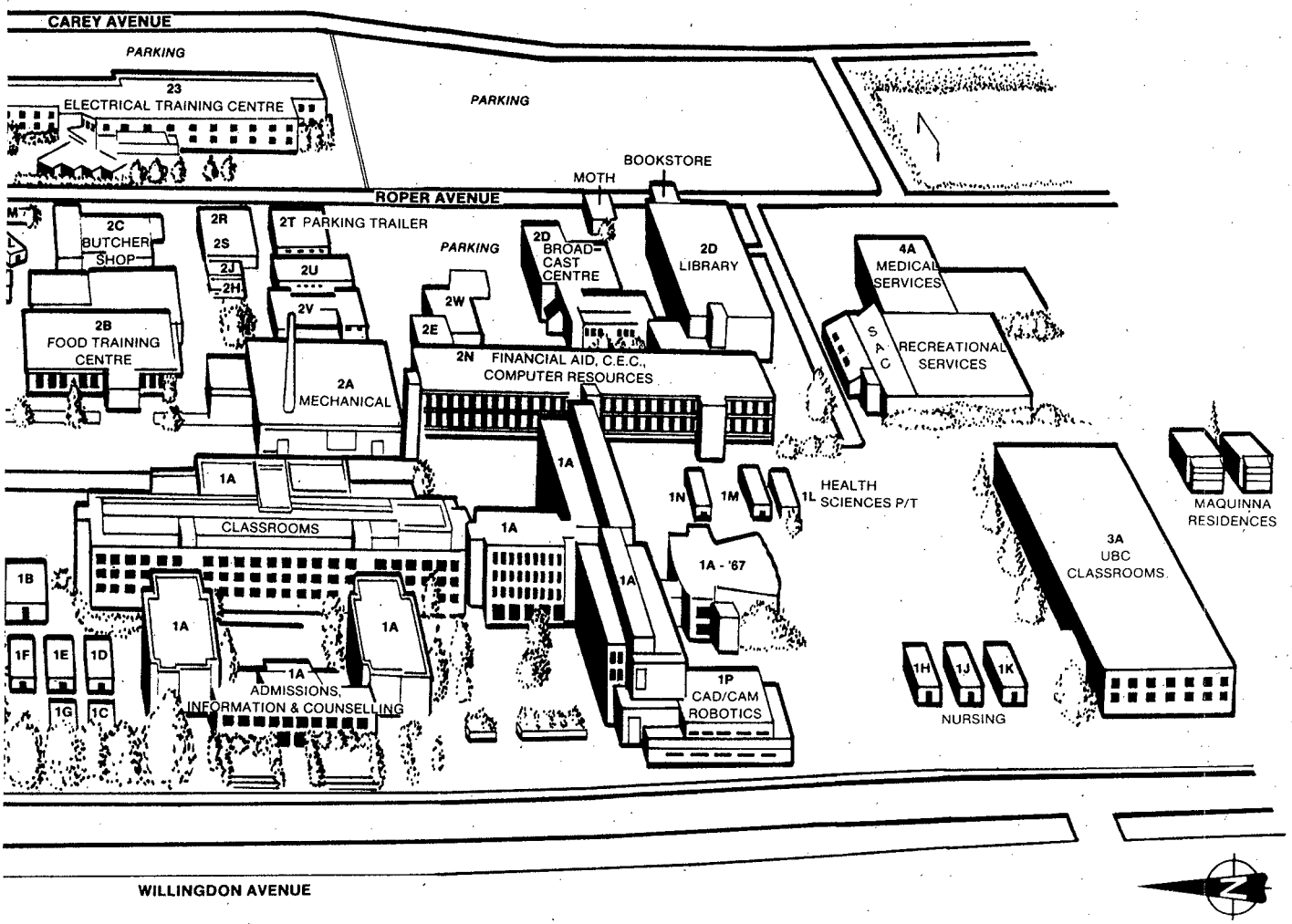
CAMPUS MAP



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Continuing Education at BCIT

The Continuing Education Division provides training opportunities to more than 8000 students annually. This is job-related training designed for serious students who demand excellence from the Institute and themselves.

Consistent with increasing training opportunities while maintaining high standards, Continuing Education provides new job-related course offerings and up-to-date teaching materials at the Institute's Burnaby, Sea Island and Maple Ridge campuses.

For more information please contact:

BCIT
3700 Willingdon Avenue
Burnaby, B.C.
V5G 3H2
Telephone: 434-1610 or
434-5722
Telex: 04-356651

Registration

Registration for courses is on a first-come, first-served basis. Students wishing to register for any course being offered may do so at any one of the Institute campuses. Tuition fees are payable in full at the time of registration and can be paid by cash, cheque, money order or approved credit, Visa or Mastercard. When tuition fees are to be paid by the employer, written authorization on company letterhead must accompany the registration form.

School of Academic and Vocational Studies

Communication

Learning and Study Skills for Adults — 12 hours

Prepares adults to resume their vocational/academic education. Topics include how to study, how to write an examination, reading with understanding, use of reference materials and resources such as libraries, audio-visual aids, time management and communicating with instructors. Instruction will give adult students the competence and confidence necessary to successfully re-enter the learning world.

Applying for a Job — 6 hours

Beneficial to anyone looking for employment, but especially to those applying for their first job. Includes application forms, writing a good resume, pre-employment tests, proper appearance for an interview, the job interview. Upon successful completion of this course students will have the necessary preparation to seek employment.

Mathematics

Industrial Mathematics — Basic — 30 hours

Designed to strengthen basic math skills for such trades as carpentry, mechanical, millwright and welding. Lectures and homework problems cover basic operations (addition, subtraction, multiplication and division), fractions, decimals, metric system, square roots, ratio and proportion, percentage, measurement of length, area and volume. Prerequisite: Grade 8 arithmetic helpful, but not required.

Industrial Math — Advanced — 30 hours

A continuation of Industrial Math-Basic which introduces students to elementary algebra, geometry and trigonometry. The aim of this course is to give a grasp of practical mathematical methods adequate for the solution of elementary problems in mechanics, carpentry and the steel trades. An ideal refresher course for apprentices with weak mathematical backgrounds. Prerequisite: Industrial Math — Basic (or equivalent knowledge).

Computer Mathematics — 30 hours

Strongly recommended as essential background to digital electronics, microprocessors and assembly language programming. Simple examples and thorough explanations are used to develop the skills needed to understand computer architecture and advanced software applications. Topics include number systems and bases, signed numbers and two's complement notation, carries, overflow and flags, logical operations and shifting, multiplication and division, multiple precision, fractions and scaling, ASCII conversions, floating-point numbers. Demonstration of IBM-PC Assembly Language Programming is included.

Computer Mathematics For Business — 48 hours

Develops practical mathematical skills for business activities: bookkeeping, accounting and forecasting of trends. Hands-on computer training gives students employable skills in business mathematics and helps to reinforce abstract concepts. Topics include basic mathematics review, exponents and logarithms, progressions, simple interest, simple discount, computer modelling and simulation, introduction to business software. Prerequisite: Grade 12 Mathematics.

Math for Electricians — Part 1 — 60 hours

Designed to prepare students for a career in electrical work, this mathematics upgrade will strengthen the 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.

Math for Electricians — Part 2 — 60 hours

Provides students with the mathematical background they need to understand AC electricity. This course is recommended to students about to enter their second year of apprenticeship studies in the electrical trade and to all others who are seeking a thorough understanding of AC principles. Prerequisite: Math for Electricians — Part 1 (or equivalent knowledge).

Math for Electronics — Part 1 — 60 hours

This course is the first of four math courses in the Electronics Technician Program and is City and Guilds of London certified. Provides students with the mathematical background needed for Physical Science and other First Year courses in the City and Guilds Program. Topics include arithmetic operations, algebra, direct and inverse proportionality, linear graphing, geometry and trigonometry, statistics. Prerequisite: Grade 12 Math.

Math for Electronics — Part 2 — 60 hours

A continuation of Math for Electronics — Part 1 in the City and Guilds of London Program which covers formulas, laws, analytical methods, exponential rates of change, trig functions, intermediate statistics, binary arithmetic and Boolean Algebra. Prerequisite: Math for Electronics — Part 1.

Math for Electronics — Part 3 — 60 hours

The City and Guilds certified follow-up course to Math for Electronics — Part 2, this course equips students to handle the mathematical details in Third Year Electronics Technician courses. Includes non-linear graphing, applied differential and integral calculus, advanced trigonometry and statistics. Prerequisite: Math for Electronics — Part 2.

School of Computing and Electro-Mechanical Studies

Aviation

Aircraft Drafting — Introduction — Level 1 — 30 hours

Includes aircraft drafting terminology, drafting skills, linework and use of instruments, lettering and lettering sets, plane and descriptive geometry, orthographic projection using logic, auxiliary views, sections and conventions, pictoral views, dimensioning and scale, plus detail and assembly drawings. Aircraft maintenance mechanics and engineers, as well as others with a keen interest in the aerospace industry, will find this course valuable.

Aircraft Drafting — Introduction — Level 2 — 30 hours

A continuation of part 1. The successful completion of parts one and two of this program provides the preparation to enter the aircraft drafting industry; a certificate attesting to this achievement will be awarded.

Aircraft Electricity — Basic — 30 hours

Of assistance to potential or working aircraft maintenance engineers who work on light aircraft. Students will become competent in the performance of basic electrical tasks and will receive sufficient knowledge to enter the avionics field. This course is a prerequisite for Basic Avionics and Aircraft Instruments.

Aircraft Instruments — Basic — 30 hours

Persons interested in knowing how to overhaul aircraft instruments, as well as those wishing to upgrade their knowledge of aircraft instruments and related systems will find this training of practical value. General aircraft instruments — such as radios, compasses and oxygen systems are reviewed. Prerequisite: Basic Avionics or Basic Aircraft Electricity (or equivalent knowledge) recommended.

Aircraft Maintenance Engineer's Upgrade to B Licence — 36 hours

Licensed aircraft maintenance engineers who intend to write the Ministry of Transport examination for a category B endorsement will receive detailed theoretical instruction on material on wood structure, welded steel structure, stressed skin structure, fabric covering, corrosion control, material identification and non-destructive testing.

Aircraft Maintenance — Introduction — Level 1 — 36 hours

Designed for the aircraft mechanic, aircraft maintenance engineer, aircraft and helicopter pilots. Students awaiting entry to the Institute's full-time aircraft maintenance program will also find this valuable. Presents the theoretical background of associated systems and knowledge of accepted aircraft maintenance practices.

Aircraft Maintenance — Introduction — Level 2 — 36 hours

A continuation of Introduction to Aircraft Maintenance — Part 1, designed for aircraft mechanics, potential aircraft maintenance engineers, aircraft and helicopter pilots. Students awaiting entry to the Institute's full-time aircraft maintenance program will also find this valuable. A certificate is awarded upon successful completion.

Aircraft Sheet Metal — Basic — 30 hours

Training in basic aircraft structure, sheet metal structural material, sheet metal layout and forming, bend allowance, fabrication, compound forming and curving metal provides students with practical knowledge of aircraft repair and maintenance. Examines the applications of sheet metal to aircraft through hands-on training at the Institute's Sea Island hangar.

Aviation Storesperson — 30 hours

Persons currently involved with aviation parts and equipment receive advanced instruction about the operations of a stores department, and the handling of sophisticated aerospace equipment. A broad understanding of basic parts and inventory control will be gained, thus providing competent aviation storespersons.

Avionics — Basic — 30 hours

Provides a good working knowledge of avionics equipment. The course builds on the foundation of electronics and expands students' horizons into the realm of avionics. Prerequisite: The Basic Aircraft Electricity course or equivalent experience.

Gas Turbine — Basic — 36 hours

Anyone who wants to know how a gas turbine engine works will find this course, which includes a field trip to the gas turbine engine overhaul facilities at CP Air, informative. It is presented in technical language understood by all students. Potential students for this program include aircraft maintenance engineers, students awaiting entry to the Institute's full-time aircraft maintenance engineer program, aircraft mechanics, pilots and owners, diesel mechanics.

Ground School for Commercial Pilot's Licence — 30 hours

Training in this advanced course prepares students to write the Ministry of Transport examination for a commercial pilot's licence (students must have a private pilot's licence and the specified amount of flying hours before writing the examination.) Meteorology, aircraft engines and airframes, air navigation techniques, aerodynamics, the theory of flight, instruments and electronic navigation, airmanship and air regulations are examined.

Ground School for Private Pilot's Licence — 30 hours

Prepares students to write the Ministry of Transport examination for a private pilot's licence. The course also serves as an excellent introduction for those wishing to gain an understanding of aviation theory. Aerodynamics, aircraft engines and airframes, air regulations and air traffic control, air navigation and flight planning, meteorology, radio systems, communications and medical factors of flight are examined.

Ground School for Advanced Private Pilot's Licence — 18 hours

Designed for persons who have completed the basic private pilots' ground school course or those preparing to write the Ministry of Transport Private Pilots' Licence. Also serves as preparation for the Ground School for Commercial Pilots' Licence course. Offers in-depth study of meteorology, navigation, air regulations and airmanship in co-operation with the aviation and aerospace industries.

Ground School for Ultralight Pilot's Licence — 30 hours

Prepares students to write the Ministry of Transport examination for an ultralight licence and is similar to the Ground School for Private Pilot's Licence course. Emphasises those areas specifically pertinent to ultralight aircraft operation: aerodynamics, air frames, navigation, meteorology, air regulations, airmanship and the theory of flight, as they pertain to the operation of ultralight aircraft.

Air Regulations — 30 hours

Designed for aircraft maintenance engineers or potential engineers who wish to learn the correct procedures for certifying aircraft products and repairs. Theoretical instruction is given in aeronautics Acts, air regulations and air navigation orders. The engineering inspection manual is reviewed extensively. Upon successful completion students will have obtained a sound knowledge of correct certification procedures for the aircraft industry.

Light Aircraft Reciprocating Engines — 30 hours

For engineers and pilots who wish to upgrade their knowledge of aircraft engines or perform their own repairs and maintenance. Includes hands-on instruction using reciprocating engines on small aircraft, and classroom lectures. Stresses rules and regulations pertaining to owners and operators working on aircraft engines.

Introduction to Helicopter Maintenance — 36 hours

Designed to satisfy the basic needs of helicopter mechanics, this course will be an asset to all pilots and owners, as well as students awaiting entry to the Institute's full-time aircraft maintenance program. Presents theoretical background of associated systems found in helicopters and teaches acceptable maintenance practices.

Ultralight Aircraft Maintenance — 30 hours

Designed to provide owners or pilots involved with the fast-growing ultralight recreational aircraft industry with the experience necessary to maintain and repair ultra light engines and airframes. Instruction includes airframe structure, metallurgy of metal alloys, non-destructive testing, shop practice and tools, flight control systems and the theory of flight.

Aviation Welding — Basic — 36 hours

Introduces students to aviation welding — tungsten inert gas (TIG), stainless steel and aluminum welding. Of interest to the certified mechanic as well as the aircraft maintenance engineering student. Focuses on cyber TIG (pulsed current gas tungsten arc welding) as it applies to the aircraft industry. Includes equal portions of theoretical and practical instruction.

Computers

LOGO For Elementary School Teachers — 12 hours

Learn how to integrate computers with other forms of instruction in the classroom. Introduces LOGO as a programming language and shows how to write simple programs with interesting educational applications. This course features classroom instruction, hands-on training, a lecture on the future of computer assisted instruction and a demonstration of state-of-the-art software developed at the Massachusetts Institute of Technology. This new software is designed to stimulate creative thought in both children and adults. Prerequisite: Introduction to Computer Operations (or equivalent knowledge).

Introduction To Computer Operations — 9 hours

Designed specifically for students who have no previous experience with computers. Using the Apple IIe computer system, students quickly master the basic keyboard skills and learn the "do's" and "don't's" of computer use. Hands-on instruction covers the disk operating system, use of peripherals, program execution, preparation of back-up copies, disk initialization and file transfer. Upon successful completion of this course, students are prepared for specialized computer courses in programming, project management, business applications and computer repair.

Fundamentals of Computer Programming — 30 hours

Develops basic programming skills which can be put to immediate use. Builds a solid foundation in structured programming which will be of long-term benefit to students in advanced courses and applications. Topics include print statements, embedded cursor commands, call numbers, screen formatting, input statements, counters and timing loops, conditional statements, subroutines, graphics-high and low resolution, sound generation, introduction to machine/assembly language. Prerequisite: Introduction to Computer Operations (or equivalent knowledge).

Microcomputer Systems Maintenance — Part 1 — 30 hours

This is the first of a two-part advanced course for those with a background in electronics which includes the use of test instruments and the ability to read electronic schematics. Upon successful completion of Microcomputer Systems Maintenance Part 1 and 2, students receive a MICROCOMPUTER SYSTEMS MAINTENANCE PROGRAM CERTIFICATE. Microcomputer Systems Maintenance Part 1 reviews analog/digital electronics, provides basic instruction in microcomputer architecture, presents troubleshooting methodology for sophisticated systems and offers hands-on training in advanced uses of test instruments. Students also practice soldering and desoldering of electronic components. Prerequisite: Electronics — Intermediate (or equivalent knowledge).

Microcomputer Systems Maintenance — Part 2 — 30 hours

A continuation of Microcomputer Systems Maintenance Part 1 in which the knowledge and skill developed in Part 1 are applied to the repair of the Apple 2 computer systems series. Students receive hands-on instruction in the repair of keyboards, disk drives, controllers and monitors. Software aids to fault diagnosis are demonstrated. Upon successful completion of the Microcomputer Systems Maintenance Program, students will have obtained the repair skills for the Apple II and related computers and will recive a MICROCOMPUTER SYSTEMS MAINTENANCE PROGRAM CERTIFICATE. Prerequisite: Microcomputer Systems Maintenance Part 1.

Introduction to Computer Repair — 60 hours

For those with a limited knowledge of math and science. The course will enable successful students to repair common faults on microcomputer systems and assist them in deciding whether they have the aptitude for a career in computer repair. Training includes a hands-on introduction to electronics and troubleshooting. Instruction covers systems architecture and operation, use of diagnostic software, repair of keyboards, disk drives and monitors. Prerequisite: Grade 11 Math and Science.

VAX Assembly Language Programming — 30 hours

For students who wish to improve their understanding of minicomputer operations and architecture. Instruction begins with a functional overview of the VAX minicomputer and a non-technical explanation of its highly sophisticated operating system. Topics include: terminal operation, log-on, log-off, system harware components, practice using the 10 DCL commands, program composition, inputting, compiling, debugging, linking and running programs in macro. The instructor will assist students to write programs suited to their interests and needs. Prerequisite: 3 months exposure to a computer system or computer programming course and high school algebra. Students lacking this background are advised to enroll first in Computer Mathematics Grade 11 Math and Science.

Introduction to Microcomputers for Business — 15 hours

For managers interested in computerizing their offices and individuals with a keen interest in computerization of the business world. Participants will receive an overview of computer software and systems. Course content includes demonstrations of popular software packages: word processing, data base management, spreadsheets and accounting. Successful graduates will have an enhanced appreciation of the applications and limitations of microcomputers in business as well as hands-on experience with business software.

Microcomputer Technician — Part 1 — 120 hours

This course is Part 1 of a hardware-intensive, 360 hour microcomputer program designed to equip students with employable skills in microcomputer maintenance. Upon successful completion of all three parts, students recieve a MICROCOMPUTER TECHNICIAN PROGRAM CERTIFICATE. Microcomputer Technician Part 1 is primarily an electronics upgrading course to prepare students for computer specialization. Topics include: electrical circuits refresher; basic electronics: rectifiers, power supplies, transistors, thyristors, opto-electronics; digital circuits: logic functions, boolean algebra, circuit design and construction, specialized logic functions, logic families, number systems; digital test equipment: the oscilloscope, waveform measurements, characteristic-curve tracers, building a tracer, IC signature using a tracer, the logic probe, the logic tracer, the current tracer, the logic clip, the signature analyser. Prerequisite: Grade 12 or equivalent mathematics skills and a working knowledge of basic electrical circuits. Students lacking this background are advised to consult the Continuing Education department before enrolling.

Microcomputer Technician — Part 2 — 120 hours

In Microcomputer Technician-Part 2 students apply the skills developed in the preceding course to microcomputer systems. Provides a thorough explanation of microcomputer architecture adequate for the development of intelligent troubleshooting methods. Theory examines system power supply, main board, bus

structure, system clocks, video generation, I/O structure, the keyboard, peripheral devices, disk drives, the video monitor, the chip map. Specially designed lab projects help students to understand these topics. In the lab work students troubleshoot the main system components and develop a sound approach to troubleshooting microcomputer systems. Prerequisite: Microcomputer Technician Part 1, or relevant experience and consent of the Continuing Education department.

Microcomputer Technician — Part 3 — 120 hours

Microcomputer Technician-Part 3 completes the training offered in the Microcomputer Technician Program by introducing students to the fundamentals of computer programming as they are useful to technicians; by providing basic training in computer interfacing which is extremely important for customizing hardware applications in special installations; and for troubleshooting faults which resist solution by elementary methods. Topics include the resident monitor, using the monitor to locate problems, the resident basic interpreter, basic programming, writing diagnostic software, I/O devices as memory locations, accessing I/O with software, basic commands, I/O slots and game connector, hard-wired interface circuits, the programmable interface adapter, digital/analog interface circuits. Prerequisite: Microcomputer Technician-Part 2.

Artificial Intelligence and Expert Systems — 16 hours

This exploratory course introduces students to state-of-the-art computer applications which will soon have a profound effect upon how industry is organized and run. Lectures and demonstrations cover the computer as a learning and thinking machine, logical analysis of natural language, programming in LISP and PROLOG. Simple expert systems will be developed and demonstrated, including a system to assist technicians to diagnose microcomputer faults.

Computer Interfacing — 18 hours

Designed to equip students with skills for custom installation and specialized applications of computer systems, the course covers the main ways in which a microcomputer may be interfaced to the outside world. Topics include logical and physical device drivers, accessing devices through software, I/O slots and the game port, hard-wired interface circuits, programmable interface circuits, digital/analog interfacing. Hands-on training includes the construction of selected interface devices. Prerequisite: Introduction to Computer Repair (or equivalent knowledge).

Computer Terminal Operator — 18 hours

Prepares students for work as terminal operators using the Institute's VAX Minicomputer. Students learn how to log on and off terminals, how to use editors and simple word processing. They receive hands-on training in the use of the 10 DCL commands and are given an overview of minicomputer systems, their architecture, function and place in the modern world.

Computer Mathematics — 30 hours

The Computer Mathematics course is strongly recommended as essential background to digital electronics, microprocessors and assembly language programming. Simple examples and thorough explanations are used to develop the skills needed to understand computer architecture and advanced software applications. Topics include number systems and bases, signed numbers and two's complement notation, carries, overflow and flags, logical operations and shifting, multiplication and division, multiple precision, fractions and scaling, ASCII conversions, floating-point numbers. A demonstration of IBM-PC ASSEMBLER Language Program is included.

Computer Mathematics for Business — 48 hours

Develops practical mathematical skills for business activities — bookkeeping, accounting and forecasting trends. Hands-on computer training gives students employable skills in business mathematics and helps to reinforce abstract concepts. Topics include basic mathematics review, exponents and logarithms, progressions, simple interest, simple discount, computer modelling and simulation, introduction to business software. Prerequisite: Grade 12 Mathematics.

Microcomputer Communications — Part 1 — 12 hours

A hands-on introduction to the field of computer communications. Training begins with an overview of communications, including electrical, microcomputer and telecommunications hardware. Topics include terminals and microcomputers, I/O control, modems, transmission modes, data transmission standards, serial data transfer: RSC-232-C; parallel data transfer: IEE-488; modulation, data codes. Prerequisite: Grade 10 Math and Basic Electricity (Ohm's Law and schematic diagram interpretation).

Microcomputer Communications — Part 2 — 18 hours

A continuation of Microcomputer Communications-Part 1 in which students are taught the fundamentals of microcomputer architecture as they pertain to communications. Training covers the communications business structure, machine language basics, microcomputer/terminal interfacing, modern operation and repair. Prerequisite: Microcomputer Communications — Part 1 (or equivalent knowledge).

IBM-PC ASSEMBLY Language Programing — 16 hours

An ideal course for those wishing to understand IBM-PC architecture and for those requiring more control over the IBM-PC than is available from high level languages. After a review of number systems, classroom lectures cover 8088/8087 fundamentals and assembly language programming. With guidance and lectures from the instructor, students begin individual programming projects suited to their interests. Topics include the design of the 8088/8087 chips, co-processing on the IBM-PC, program transfer instructions, sub-routines, addressing modes, segmented memory and I/O, interrupts and strings, code macros, relation of assembly language to other computer languages. Prerequisite: Computer Mathematics (or equivalent knowledge).

Robotics and Expert Systems — 16 hours

An introduction to the programming techniques used in the development of an expert system for the control of an industrial or personal robot. Students will be taught how to write programs which learn and reason, and will develop simple programs for the control of a simulated robot.

Introduction to PROLOG — 16 hours

PROLOG is the new language of the Japanese Fifth Generation Project. It is ideally suited for non-numerical information processing and for representing human reasoning in the form of EXPERT SYSTEMS. This course introduces students to state-of-the-art programming methods and provides them with hands-on training in the use of PROLOG and individual assistance in writing PROLOG programs suited to their own needs. Topics include the nature, syntax and semantics, advantages/disadvantages of PROLOG, and introductory programming in PROLOG.

Introduction to LISP Programming — 16 hours

LISP is the primary language for artificial intelligence applications in North America. This course is intended to provide students with an elementary appreciation of the power and applications of this language. Hands-on training using the language is included.

Topics include: functional programming languages, syntax and semantics of LISP, advantages/disadvantages of LISP, examples of LISP programs, applications of LISP, the future of functional languages.

Computer Assisted Project Management — 30 hours

Demonstrates the methods and great benefits to managers of computer assisted management including reduced stress, better control, reduced cost and shortened schedules for projects. Upon successful completion of this course, students will be able to make effective use of project management software in business and industry. Emphasis is on applications within the construction industry. Topics include overview of project management software: PERT and CPM, system requirements, limitations and specifications; operation: menus and display, definition of parameters, start-up and execution, creation of new projects, time schedule display, project modification; course summary: final job description, print-out of summary report, saving the project on disk. Prerequisite: Experience with project management or job scheduling helpful.

Electrical

Electrical Code — Basic to Intermediate — 60 hours

This course is designed to give students a good working knowledge of the Canadian Electrical Code (except for high voltage). Upon successful completion, students will be prepared to write either Class C or Class B contractors license 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. Code Topics include:

- Section 4 Conductors;
- Section 6 Services;
- Section 8 Demand and Loading;
- Section 10 Grounding;
- Section 12 Mining Methods;
- Section 14 Protection and Control;
- Section 16 Class 1 and Class 2 Circuits;
- Section 18 Hazardous Locations;
- Section 26 Installation of Equipment;
- Section 28 Motors and Generators;
- Section 30 Installation of Lighting;
- Section 32 Fire Alarm Systems;
- Section 42 Electrical Welders;
- Section 46 Emergency Systems and Unit Equipment;
- Section 62 Heating Systems;
- Section 68 Swimming Pools;
- Section 72 Mobile Homes;
- Section 78 Marinas and Yacht Clubs.

Prerequisite: Knowledge of wiring methods and terminology.

Electrical Code — Advanced — 60 hours

Training covers all sections of the current electrical code, with particular emphasis upon high voltage requirements. Instruction is designed to prepare students for writing the Class A contractors license examination. In addition to the material in Electrical Code-Basic to Intermediate, topics include 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 and equipment; maintenance: substation, vault, transformer, switches; pole construction: overhead line regulations, rigging methods, clearance requirements. Prerequisite: Journeyman level of knowledge and experience, three phase and high voltage experience recommended.

Electrical Code — High Voltage — 9 hours

A short course designed for students who already have a good background in the electrical code and who need specific upgrading to HV regulations and requirements. Coverage includes circuit conductors, cable termination, HV switchgear, protection, grounding and maintenance of HV installations. Prerequisite: Journeyman knowledge and experience.

Electrical Estimating — Basic — 16 hours

An ideal course for electricians who wish to become familiar with the procedures for estimating electrical work. Basic estimating concepts for small to medium jobs are taught. Specific topics include the fundamentals of estimating labour and materials cost, pricing and quotations. Prerequisite: Familiarity with electrical terminology and wiring methods.

Electrical Estimating — Intermediate — 16 hours

A continuation of Electrical Estimating-Basic in which students are taught the fundamentals of commercial and industrial estimating including analysis of request for quotation and bid documents, materials take-off from prints and schematics, labour costing, preparation of bid documents. Prerequisite: Electrical Estimating — Basic.

Electrical TQ — Part 1 — 39 hours

Electrical TQ-Part 1 is the first of a two-part program designed as a review/refresher of the electrical trade. Successful completion of this two-part program is adequate preparation for the Electrical TQ examination. Students desiring to write this examination are advised to confirm their eligibility before enrolling in the program. Electrical TQ-Part 1 topics include general trade knowledge: meggers, hydrometers, magnetic flux, series parallel circuits; transformers; motors, generators and alternators, motor control. Prerequisite: Journeyman level of experience in electrical work.

Electrical TQ — Part 2 — 36 hours

A continuation of Electrical TQ — Part 1 which rounds out the review/refresher of the electrical trade. Topics include measuring and test instruments, industrial electronics, electrical code. Prerequisite: Electrical TQ — Part 1 (or consent of department).

Climatic Controls — 24 hours

Climatic Controls covers theory, devices and installation methods for temperature and humidity controls in commercial buildings, schools, etc. The course is mainly concerned with an introduction to electronic circuits, components and their function in relation to the basic principles of design, operation and maintenance of heating, ventilating and air conditioning systems.

Fire Alarms — 9 hours

Persons interested in the installation, maintenance and troubleshooting of modern fire alarm systems will find that the practical approach to training in this course fulfills their requirements. Topics include detection devices and systems, circuit wiring and classification, staged systems, symbols, terminology and convections. Prerequisite: High school knowledge of electricity and some wiring experience.

High Voltage — Basic — 42 hours

Will enable HV installers, operators and maintenance personnel to perform their work safely and effectively. Hands-on training of HV cables is included. Topics include general concepts and terminology, switches and circuit breakers, protection and control, HV cables and terminations, medium voltage switchgear, HV fuses. Prerequisite: Journeyman level of knowledge and experience. The Continuing Education department reserves the right to deny admission into this course when a candidate's experience is inadequate for high voltage training.

High Voltage (Basic to Intermediate) — 45 hours

Course offers review of essential prerequisites: mechanical, electrical. 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: in 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 and misuse; shield grounding of HV cables through zero-sequence sensors: the correct way; the incorrect way; potheads and terminators: purpose, applications; fundamentals of

TELX 950 - Introduction to Electronics - 36 Hours

This course is designed to prepare those who have little or no understanding of electric terms and conventions. Topics covered include Resistance, Capacitance, Inductance, Ohm's Law, Kirchoff's Laws, Simple Trigonometry, and other subjects necessary to prepare students for further courses in the fascinating world of Electronics.
Prerequisite: None.

TELX 951 - Electronics 1 - Solid State Devices - 36 Hours

This is the first of a nine part series of "hands-on" courses in Electronics. Upon successful completion of the first five parts, students will receive a Certificate of Electronics. Topics covered in this first course include Semi-conductor theory, Diodes, Zeners, LED's, Transistors, SCR's, Triacs, Diacs, and UJT's etc.
Prerequisite: Good understanding of basic electricity such as Ohm's Law, Kirchoff's Laws, etc.

TELX 952 - Electronics 2 - Digital Techniques 1 - 36 Hours

This course covers Number Systems and Codes, Logic Gates, Truth Tables, Boolean Algebra, Flip-Flops, Counters, Shift Registers, and I.C. Timers.
Prerequisite: None.

TELX 953 - Electronics 3 - Digital Techniques 2 - 36 Hours

This course covers Logic Parameters, comparison of types of TTL Logic, CMOS, Tri-state Logic, Binary and BCD Arithmetic, Memory Chips and Circuits.
Prerequisite: Electronics 2 or equivilent.

TELX 954 - Electronics 4 - Microprocessors 1 - 36 Hours

This course is based on the 6800 microprocessor. It covers Microcomputer Basics, Addressing Modes, Branching, Computer Arithmetic, and Simple Programming in Machine Language.
Prerequisite: Electronics 3 or equivilent.

TELX 955 - Electronics 5 - Microprocessors 2 - 36 Hours

This course is a continuation of Electronics 4 and includes Stack Operations, Sub-routines, Input/Output (I/O) Operations, Interrupts, and Simple Interfacing.
Prerequisite: Electronics 4.

TELX 956 - Electronics 6-Microprocessor Interfacing 1-36 Hours

This course introduces the students to some of the methods used to interface the microprocessor 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: Electronics 5.

TELX 957 - Electronics 7-Microprocessor Interfacing 2-36 Hours
This course is a continuation of Electronics 6 and covers the Asynchronous Communication Adapter, Static vs Dynamic RAM, Dynamic RAM refreshing, ROM, PROM, EPROM, EEROM, and Programmable Timer Modules.
Prerequisite: Electronics 6.

TELX 958 - Electronics 8-Microprocessor Application 1-36 Hours
This course introduces the students to some of the applications of microprocessors. It covers applications using DAC and ADC, Analog Signal Conditioning, Motor Control and Positioning, and Process Control.
Prerequisite: Electronics 7.

TELX 959 - Electronics 9-Microprocessor Application 2-36 Hours
This course is a continuation of Electronics 8 and covers Sensors and Transducers, Electronic Control Devices, DC motors, Stepper Motors and Control, and Phase Locked Loops.
Prerequisite: Electronics 8.

TELX 970 - Operational Amplifiers - 36 Hours
This course covers Basic Linear Amplifier Circuits, Nonlinear Signal Processing Circuits, Differentiator and Integrator, Voltage and Current Circuits, Wave Form Generators, and Active Filters, etc.
Prerequisite: Electronics 1 or equivilent.

TELC 923 - Math. for Electricians 2 - 60 Hours

This course is recommended to students about to enter the second year of apprenticeship studies in the electrical trade and to all others interested in an understanding of AC principles. Coverage includes Basic Trigonometry, Vectors and Polar notation, Electrical Power, Transformers and Rectifiers.

Prerequisite: Math. for Electricians 1 or Equivilent.

TELC 925 - Math. for Electricians 3 - 60 Hours

This course is recommended to students about to enter the third year of apprenticeship studies in the electrical trade and to all others interested in an understanding of 3 Phase circuits and equipment. Topics include Wye and Delta systems, Alternators, Transformers, and Power Factor correction.

Prerequisite: Math. for Electricians 2 or Equivilent.

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; different applications. Prerequisite: Journeyman level of experience in electrical work.

Lighting Basic — 60 hours

The course is designed for journeymen wiremen in the electrical trade. Will upgrade participants skills in the installation, maintenance and design of electrical lighting systems in common use. Specific areas for detailed study include: 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 audiovisual materials and demonstration units. Performance objectives for the participant will include: assembling and connecting fixture components, and assessing by measurement and observation their operation; light level measurement, 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 a necessity for upgrading the Electrical Journeyman in the field today. Prerequisite: Familarity with wiring methods and Electrical construction.

Marine Electrical/Electronics — 48 hours

Course covers AC Machines and Operation, AC Generators; alternators in parallel; synchronising, the synchroscope, synchronising lamps. Parallel operation: excitation and throttle control. Load sharing: kW loads and kVAr loads. DC machines: testing, output, efficiency and losses. Special DC machines: the rotating amplifier. The transformer: referred values of resistance, reactance and impedance. Efficiency of a transformer. The transductor — instrument transformers: the current transformer (CT), the voltage transformer (VT). The auto-transformer: fixed ratio and variable ratio types. The Alternator: rotating armature and rotating field types. Excitation arrangements: rotary (brushless alternator) and static systems. The alternator on load: voltage regulation and phasor diagram. Prediction of voltage regulation: synchronous impedance method, ampere-turn method. Synchronising torque. The Induction Motor: principle of operation. Rotor to stator relationships. Relation between rotor losses, rotor input power and rotor output. Electronics: the semiconductor diode. The Zener diode. The junction transistor. Transistor characteristics: circuit configurations, load lines, leakage current. Prerequisite: 3 years experience in electrical trade.

Math for Electricians — Part 1 — 60 hours

Designed to prepare students for a career in electrical work, the course is a mathematics upgrade which also strengthens the understanding of basic electrical concepts. Math for Electricians is recommended especially to 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.

Math for Electricians — Part 2 — 60 hours

Provides students with the mathematical background they need to understand alternating current (AC) electricity. This course is recommended to students about to enter their second year of apprenticeship studies in the electrical trade and to all others who are seeking a thorough understanding of AC principles. Prerequisite: Math for Electricians — Part 1 (or equivalent knowledge).

Motor Control — Basic — 30 hours

A practical, hands-on course in motor control. Instruction covers 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. Prerequisite: Some wiring experience and basic electrical knowledge.

Motor Control — Intermediate — 30 hours

A continuation of Motor Control-Basic in which students are introduced to three-phase, multispeed controllers, synchronous motor controls, DC controllers, motor drives and programmable controllers. Ample hands-on training provides students with a solid grasp of motor control principles and industrial applications. Upon successful completion of Motor Control-Intermediate, students are equipped to install and service motor control circuits. Prerequisite: Motor Control-Basic.

Residential Wiring — Basic — 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 electrical code are all covered.

Residential Wiring — Intermediate — 36 hours

A continuation of Residential Wiring — Basic which gives students further lab practice and the opportunity to work on complex electrical circuits. In many cases, successful students will attain a sufficiently high level of practical understanding and skill that they will be able to completely wire a new house. Topics include service grounding, hot tubs, water hazards, code and safety requirements, sizing of service conductors and voltage drops. Prerequisite: Residential Wiring-Basic.

Small Motor Maintenance — 18 hours

A practical, hands-on course in the maintenance of small motors. Students are encouraged to bring in defective motors for study and repair. Topics include magnetism, rotating magnetic fields, single phase, starting switches, switch replacement, testing split phase motors, replacing windings in split phase motors; servicing single phase motors: furnace motors, drill motors, saws, fans. Upon successful completion of Small Motor Maintenance, students will be able to correct most small motor faults.

Welding and Rigging for Electricians — 48 hours

Provides the student with the theory and safety required for developing the practical skills of Arc Welding. The student will be able to select welding electrode sizes and types to suit varied material thicknesses and applications, operate and adjust all common types of constant current welding machines, and produce satisfactory welds in all common joint configurations. Topics include: use and safety of the oxy-acetylene cutting process, use and safety of the oxy-actylene brazing, application of different fuel gases used in industry, repair to the equipment, rigging and material handling: basic knots and hitches, breaking strengths and safe workingloads, calculations of reeving arrangement, leadline pull and mechancial advantage, rigging applications (pulley and tackle), final theory test and practical rigging assignment; safety and job-organization: special precautions and dangers in welding, fabrication, rigging.

Industrial Electronics

Digital Electronics — Basic — 36 hours

An ideal course to launch a career in industrial control, computers or state-of-the-art consumer electronics including home and car stereo. Digital Electronics — Basic is the first part of a three part program in Digital Electronics. Upon successful completion of all three parts, students receive a DIGITAL ELECTRONICS PROGRAM CERTIFICATE. Digital Electronics — Basic covers control and communications circuits, practical design principles, troubleshooting; and includes circuits analysis review, introduction to digital systems, binary numbers, numbers in different bases, binary codes, logic functions, using integrated circuits, design of combinational logic circuits, interfacing to TTL, the 7-segment display. Prerequisite: Basic Electronics or knowledge of Ohm's Law, Kirchoff's Laws, Diodes and Transistors.

Digital Electronics — Intermediate — 36 hours

A continuation of Digital Electronics — Basic which introduces students to memory systems, flip-flops, counters, shift registers and arithmetic circuits. Practical skills are developed in a series of lab projects designed to prepare students for troubleshooting real circuits. Industrial and computer applications are stressed. Prerequisite: Digital Electronics — Basic (or equivalent knowledge).

Digital Electronics — Advanced — 36 hours

Concentrates on digital/analog interfacing, covering operational amplifiers and both A/D and D/A conversions. Students learn how to modify existing circuitry to meet changing requirements. A combination of practical design tips and supporting labwork equips students with sophisticated troubleshooting skills and prepares them for courses in computer architecture. Prerequisite: Digital Electronics — Intermediate (or equivalent knowledge).

Industrial Electronics — 60 hours

A practical course designed to give students experience in constructing basic electronic circuits. The circuit knowledge gained from the lab work will be of enormous benefit to those trying to learn the art of troubleshooting modern electronic circuits. Topics include use of multimeter, oscilloscope and other common test instruments, semi-conductor theory, P-N junction, diodes and LEDs, bi-polar junction transistors, thyristors and opto electronics. An introduction to Programmable Controllers is included. Prerequisite: Electronics-Basic (or equivalent knowledge).

Programmable Controllers — Basic — 15 hours

This is the first of a three-part program in Programmable Controllers. Upon successful completion of all three parts, students receive a PROGRAMMABLE CONTROLLERS PROGRAM CERTIFICATE. Programmable Controllers-Basic provides students with the fundamental knowledge needed to operate a programmable controller and provides an overview of the programmable controller as a device in modern industry. Topics include functional overview of programmable controllers, advantages of programmable controllers over conventional relay systems, hardware requirements for programmable controller systems, peripheral devices, system operation, introduction to programming and data manipulation. Prerequisite: Industrial wiring experience and familiarity with motor control schematics.

Programmable Controllers — Intermediate — 30 hours

A continuation of the Programmable Controllers — Basic course which explores industrial applications and provides hands-on training in programming and system operation. Instruction covers advanced circuitry, specialized modules, installation, troubleshooting, data manipulation routines, data communications, graphics and diagnosis. Prerequisite: Programmable Controllers — Basic (or equivalent).

Programmable Controllers — Advanced — 30 hours

Students learn to make effective use of programmable controllers and develop the ability to write efficient programs with important industrial applications, upon successful completion of this course. Topics include use of cassette loaders, graphics capabilities of the industrial terminal, automatic report generation and diagnostic programming, analog inputs and outputs, counters and ASCII files, data highways, small processors, introduction and demonstration of computer assisted control. Prerequisite: Programmable Controllers-Intermediate.

Introduction to Robotics — 18 hours

An overview of the robotics field — both personal and industrial. Hands-on training is included using a robot learning system. Students are introduced to design and maintenance problems of robotics technology and to the tremendous potential of robotics in the workplace of the future. Students are given an overview of each of the fundamental systems in a robot: mechanical, electrical, electronic and computer. They are taught to program a robot using the assembler of its on-board microprocessor. This course is highly recommended to those considering a career in robotics.

Microprocessors — Basic — 30 hours

Designed to give students a working knowledge of basic microprocessor principles and helpful to students of industrial electronics and computers. Microprocessor trainers are used to give students the hands-on exposure needed for a concrete grasp of microprocessor operation and function. Topics include microprocessor organization and architecture, address decoding, programming model, memory mapping, programming techniques, straight line, branching, looping, interface techniques, I/O, serial/parallel, A/D and D/A. Prerequisite: Digital Electronics — Intermediate (or equivalent knowledge).

Telecommunications and Electronics

Electrical Principles — Part 1 — 60 hours

Part 1 of the accredited City and Guilds of London Telecommunications Program, Electrical Principles is a mathematically oriented course for those seeking certification as Electronic Technicians. The intent of the course is to give students a systematic understanding of electrical fundamentals. Topics include circuit theorems, Ohm's Law, Kirchoff's Laws, capacitors and capacitance, the magnetic field, electromagnetic induction, alternating voltage and currents, single phase AC circuits, measuring instruments and measurements. Prerequisite: Physical Science and Math for Electronics — Part 1

Electrical Principals — Part 2 — 60 hours

A continuation of Electrical Principles — Part 1 which is also part of the accredited City and Guilds of London Telecommunications Program. Electrical Principles — Part 2 is a strong, mathematical presentation of the electrical theory which is a necessary part of a Technician's education. Topics include circuit theorems, Thevenin's Theorem, Norton's Theorem, AC circuits, three phase supply, DC transients, electrical machines, measuring instruments and measurements. Prerequisite: Electrical Principles — Part 1

Basic Electronics — 36 hours

A hands-on introduction to the modern electronics field. Students learn the fundamentals of DC electronics using such tools of the trade as multimeters, oscilloscopes and signal generators. Topics include atomic structure, basic electrical units: amps, volts, Ohm's, Watts, safety, color code, schematic symobls, Ohm's Law, series circuits, parallel circuits, combination circuits, introduction to AC concepts. Prerequisite: Grade 10 Math and Science

Electronics — Intermediate — 36 hours

A hands-on continuation of Electronics — Basic which introduces the student to AC Electronics. A practical grasp of AC principles is achieved through lab work which reinforces the theory presented in lectures. Topics include magnetism, generation of sinusoidal waveform, inductance, capacitance, capacitive reactance, inductive reactance, transformers, diodes, power suppliers. Prerequisite: Electronics — Basic.

Electronics — Advanced — 36 hours

Electronics — Advanced completes our series of hands-on electronics courses designed to give students a practical grasp of the modern electronics field and to prepare them for specialized study in computer repair, telecommunications and TV/VCR service. Topics include diodes as rectifiers, zener diodes as voltage regulators, transistors as linear amplifiers and switches, operational amplifiers, multivibrators, digital IC's. Prerequisite: Electronics — Intermediate.

Microelectronic Systems — Part 1 — 60 hours

For students with a solid grasp of electronics, this City and Guilds certified course is a challenging, hands-on introduction to microprocessor technology. Topics include systems defined in terms of 1/0, structure of simple systems, analog and digital systems, microprocessor system, hardware and software, registers, logic circuit families. Prerequisite: Completion of the First Year City and Guilds Telecommunications Program (or equivalent knowledge).

Microelectronic Systems — Part 2 — 60 hours

A hands-on continuation of Microelectronic Systems — Part 1, this course is also City and Guilds of London certified. Microprocessor systems sufficiently complex to be classified as computer systems are the focus of this course. Lab work and lectures give students a practical grasp of microprocessor applications and troubleshooting methodology. Topics include binary and logic, fetch/execute cycle, program creation at machine code level, instruction sets, program loops, data/instruction storage, bus mechanisms and communications, interfacing. Prerequisite: Microelectronic Systems — Part 1.

Microelectronic Systems — Part 3 — 60 hours

Microelectronic Systems — Part 3 is a City and Guilds of London certified course dealing with microcomputer hardware and configuration. It provides advanced training to electronic technicians specializing in applied computer technology. Lectures combined with lab work develop a broad-based understanding of computer systems which can serve as the foundation for work in computer maintenance and custom installation. Topics include I/O timing, interfacing devices, decoding, sub-routines, stack, interrupts, microelectronic stores, memory organization, timers, programming. Prerequisite: Microelectronic Systems — Part 2.

Optic Electronics/Fibre Optics — 36 hours

The theory of fibre optics will be covered in detail in this course, including laser emission and principles, injection laser Diodes (ILD's), optical principles (mirrors, lenses and prisms) and practical systems. The student will do electronic lab work and terminating of fibre cable. The second part of the course covers optical sensor using advanced pulsing technology to distinguish between ambient-light levels. Various sensing heads and logic modules will be discussed and included in lab work.

Communication Studies — 60 hours

A certified City and Guilds of London course designed to develop the oral and written communications skills of technicians. Topics include written and oral communication, graphical communication, use of libraries, selection and synthesis of information, customers' telecommunications needs in modern society, technical report writing. Student evaluation is based upon the preparation and delivery of a technical report before an audience.

Physical Science — 60 hours

A certified City and Guilds of London course covering the basic physical science required of electronic technicians. In this course, physical concepts and fundamental laws are presented systematically and developed mathematically using algebra and statistics. Topics include material properties and statics, Hooke's Law, principles of pressure in fluids, motion and energy, heat and temperature, electricity, electromagnetic effects. Prerequisite: Mathematics for Electronics — Part 1.

TV Repair — Part 1 — 45 hours

An introduction to electronics, circuit theory, troubleshooting and repair techniques with emphasis on TV servicing. Topics include electronic components: resistor, capacitor, diode, inductor and transformer; transistors and integrated circuits: NPN, PNP, common base, common collector, analog circuits, IC types and functions; power supplies: basic ps (full wave, half wave, bridge), linear ps (voltage regulator) and switching power supply; testing instruments: analog multimeter, DVM and oscilloscope; Ohm's Law and basic electronics principles; frequency generator: multivibrator, oscillator, signal mixer and separator; telecommunications: AM,

FM, side bands, antenna and impedance; TV systems and standards: raster, field, frame, interlace, composite video, luminance, chrominance, colour component, colour burst, sync signal; TV block diagram analysis; symptoms and indications; guided repair practice.

TV Repair — Part 2 — 45 hours

A practical, hands-on continuation of TV Repair — Part 1 which applies the circuit knowledge gained in Part 1 to actual service work. Topics include sync and high voltage circuits, sound systems, video and matrixing circuits, repair procedures, service adjustment, alignment. Prerequisite:TV Repair — Part 1.

TV Repair — Part 3 — 45 hours

An introductory course in VCR service which covers mechanical jigs and fixtures, alignment tape, system-control, record-playback checks, color and service system problems. Prerequisite: TV Repair — Part 2.

Math for Electronics — Part 1 — 60 hours

This course is the first of four math courses in the Electronics Technician Program and is City and Guilds of London certified. Training provides students with the mathematical background needed for Physical Science and other first year courses in the City and Guilds Program. Topics include arithmetic operations, algebra, direct and inverse proportionality, linear graphing, geometry and trigonometry, statistics. Prerequisite: Grade 12 Math.

Math for Electronics — Part 2 — 60 hours

A continuation of Math for Electronics — Part 1 in the City and Guilds of London Program which covers formulas, laws, analytical methods, exponential rates of change, trig functions, intermediate statistics, binary arithmetic and Boolean Algebra. Prerequisite: Math for Electronics — Part 1.

Math for Electronics — Part 3 — 60 hours

The City and Guilds certified follow-up course to Math for Electronics — Part 2, this course equips students to handle the mathematical details in Third Year Electronics Technician courses. Course content includes non-linear graphing, applied differential and integral calculus, advanced trigonometry and statistics. Prerequisite: Math for Electronics — Part 2.

Mechanical

Air Brakes for Drivers — 21 hours

Drivers who plan to write the Provincial Air Brake Endorsement ticket to enable them to drive vehicles equipped with air brakes, will find this instruction valuable. Provides the introduction to air brakes theory necessary for that ticket. While driver training is not provided, driver demonstrations and tips on driving provide an important part of the curriculum. Classroom instruction includes a discussion of the five basic components of an air brake system: warning devices, valves, tractor/trailer operation, troubleshooting and safety.

Air Brakes for Mechanics — 30 hours

An ideal refresher for mechanics who have had limited experience servicing air brakes and for owners and operators of trucks or fleets who wish to be informed about their vehicles' braking systems. Includes the 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.

Auto Air Conditioning — 30 hours

Mechanics who wish to increase their job opportunities by adding specialized knowledge about automotive air conditioning systems to their skills will find this course valuable. Successful graduates will have a thorough understanding of automotive air conditioning systems and will be able to service and install these systems according to manufacturers' specifications. Students should have completed a substantial portion of an apprenticeship or have experience with automotive mechanics before enrolling in this hands-on course. Includes theory of operation, system operation, components, controls, basic systems, system servicing, adjustments, performance tests, system repairs and diagnosis.

Auto Electronic and Emission Control — 42 hours

This advanced course gives experienced automotive mechanics specialized instruction in carburetion and advanced tune-up techniques. Explores the repair and maintenance of electronic components and emissions control devices in automobiles. Although basics are covered, normal service practices should be known. Topics include carburetion, electronic carburetion, fuel injection, turbocharger operation, engine electrical, ignition systems, charging system theory and testing, operation and testing of emissions controls. Upon successful completion of the course, students will be specialized in advanced automotive engine diagnosis, troubleshooting, and repair. Supervisors of automotive mechanics will find the course valuable.

Automotive TQ Refresher — 60 hours

Provides students with the necessary theoretical instruction to enable them to write the Provincial Automotive Mechanics' Examination. Students should have a comprehensive working knowledge of automotive skills and intend to write the exam. 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.

Auto Tune-Up — Basic — 42 hours

This highly-developed auto tune-up training course will allow novices or do-it-yourselfers to perform automotive tune-ups. Students should be familiar with automotive parts, tools and shop safety prior to enrolling. Successful graduates will have a working knowledge of automotive tune-ups, simple carburetion adjustments and engine operation theory. There will be instruction in the use of common electrical test equipment and instruments. Emphasis is placed on hands-on instruction.

Autobody Repair — Parts 1 and 2 — 84 hours (part 1: 48 hours, part 2: 36 hours)

Anyone interested in restoring cars or seeking employment as assistant in autobody repair shops would benefit from this course. You will learn to use grinders, sanders, oxyacetylene welding, dollies, hammers and pulleys in various applications to repair older automobiles. Part 1 teaches fundamentals of the trade: oxyacetylene welding, brazing, straightening and shrinking metal, applying hot and cold fillers. Part 2 builds on these fundamentals and students proceed with body work on their own vehicles. Expert guidance is available.

Auto Preparation and Spray Painting — 42 hours

For anyone interested in learning the technical aspects of auto body preparation and paint spraying. This practical hands-on course will increase graduates' employment opportunities and will develop competence among do-it-yourselfers. Students who have completed the two-part auto body repair course will be particularly interested in this course.

Auto Trim and Upholstery — 24 hours

Anyone interested in learning how various pieces in vehicles fit together and hold upholstery in place should enrol in this introductory course. Provides participants with the opportunity to reupholster seats or replace carpets in their own vehicles. Offers hands-on experience with automobile seats, floor mats and trim.

Automatic Transmissions — 48 hours

An ideal refresher for automotive mechanics who require upgrading in automatic transmissions. Of benefit to apprentices or mechanics seeking specialized employment in the automatic transmission field. Upon successful completion, students will be able to trace paths of power in transmissions, diagnose problems and prescribe repair procedures. Instruction is held in both the classroom and the shop and includes vehicle drive line, gear ratios, simple planetary gears, fluid coupling, torque converters, lock-up, basic hydraulics, valve bodies, Simpson gear sets, power glide (two speed), FMX (three speed), AOT (four speed), automatic trans axles, pressure testing and linkage adjustments.

Automobile Brake Servicing — 30 hours

For mechanics who require upgrading in brake servicing or students seeking specialized employment working with automotive brakes. Students should have a minimum of three years mechanical experience before enrolling in this advanced, hands-on course. Successful graduates will be able to perform almost any inspection/repair necessary on disc/drum brake assemblies. Provides intensive training in hydraulics, friction, single piston master cylinder, hoses, dual piston master cylinders, wheel cylinders, valves, tubing, fluids, brake drums, drum brake assemblies, disc/rotor, disc brake assemblies, parking brakes (propeller shaft and rear axle types) and power brake boosters.

Compressed Natural Gas Conversion (CNG) — 30 hours

Designed to prepare persons in the motor vehicle industry to install and service CNG conversions and accessories. Students must have proof of journeyed status as automotive mechanics or

successfully complete a pre-entry examination before enrolling. Successful graduates may seek employment with CNG conversion centres, service stations, automobile manufacturers, accessories stores, or be self-employed. Topics include safety, basic test equipment, characteristics of CNG, engine and ignition requirements, CNG components, installation, refuelling, tune-ups and troubleshooting.

Liquid Propane Gas Conversion (LPG) — 18 hours

This 18 hour course is intended for students who have successfully completed the 30 hour CNG conversion course. Provides theoretical and practical instruction in the installation of an LPG alternate fuel system for automotive or heavy duty vehicles. Students receive a government certificate upon successful completion of the course.

Liquid Propane Gas Conversion (No CNG Required) — 30 hours

Designed for experienced mechanics who do not require training for CNG conversion. The 30 hour course covers theory and practical training requirements for government certification upon successul completion. Students must have a minimum of four years related experience in the automotive industry or pass a pretest which is written during the first session.

Engine Rebuilding — 36 hours

In this course, students will overhaul an automotive engine according to the manufacturer's specifications. Instruction includes engine theory, component inspection, supervision of disassembly and reassembly, plus necessary machining for the automotive trade. Upon successful completion, students will be able to perform basic engine rebuilding with some assistance depending on overall trade knowledge. Students may supply an engine if they arrange for the automotive body to be towed away when the engine is removed. The course is scheduled on Saturdays, permitting extended shop time.

Front End Alignment — 42 hours

An ideal refresher for experienced automotive mechanics who require upgrading in front end alignment work. Of benefit to apprentices or students seeking specialized employment in front end alignment work. The course teaches the use of alignment equipment, steering geometry, suspension systems, steering linkage and gears. Emphasis is on fault diagnosis. Enables graduates to perform front end alignment fault diagnosis and repairs to acceptable standards.

Heavy Duty Mechanics for Owners/Operators — 48 hours

Designed to familiarize heavy equipment owners or operators with preventive maintenance, servicing and repair of heavy duty mobile equipment. Instruction is provided in starting and moving equipment, various engines, drive trains, frames and suspension; hydraulics, steering, brakes, electricity, servicing and troubleshooting. Upon successful completion of this course, students will be able to diagnose simple problems, recognize the importance of proper maintenance and the fundamental procedures for servicing heavy duty mobile equipment.

Heavy Duty Electrical Troubleshooting — 48 hours

For heavy duty truck and equipment owners or operators, and of interest to those experienced with hydraulic equipment, or heavy duty apprentices. Reviews theory, demonstrates test procedures and outlines troubleshooting procedures on circuits and components related to trucks, buses and heavy equipment. Topics include electrical theory, circuits and math; test instruments; batteries and chargers; starters; DC charging systems — generators and regulators; alternators; basic ignition system; transistorized ignition system; automatic shut-down systems on diesel engines; miscellaneous electrical circuits on trucks, buses and heavy equipment. Successful graduates will understand and be able to troubleshoot problems in heavy duty equipment systems.

Heavy Duty Mechanical TQ Refresher — 60 hours

Provides students with the necessary instruction to enable them to write the provincial Heavy Duty Mechanics examination. Students should have a comprehensive working knowledge of heavy duty mechanics skills and intend to write the exam. 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.

Heavy Duty Transmission and Differentials — 48 hours

A refresher for experienced heavy duty mechanics who require upgrading or for apprentices who seek further information on clutches, torque converters, transmissions and differentials. Topics include the operation of planetary transmissions, torque converters, hydraulic pumps and controls and bevel gear differentials, valves and hydro-dynamics. It is recommended that students have a basic knowledge of the various types of transmissions and differential components and terminology as well as practical experience in heavy duty mechanics before enrolling in this course.

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 will be delivered through a combination of theory, demonstrations and hands-on experience and include design concepts, superchargers, turbochargers, nitrous oxide and other aspects of building American engines into high performance engines. Successful graduates of High Performance Auto 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. Although students need not be journeyed mechanics, a sound understanding of automotive engine theory and operation is required. The course utilizes off-campus commercial shop facilities for the hands-on training.

Industrial Hydraulics Stationary — 42 hours

Designed to assist the maintenance personnel of industrial sites in the testing, repair, examination and troubleshooting of basic fluid power circuits and component parts. Explains, demonstrates and identifies basic fluid power circuitry and components and basic hydraulic theory. Students will study the principles and practices of reservoirs, fluid conditioners, fluids, conductors, pumps, pressure control, flow control, directional control, actuators, seals, types and graphics for symbols, circuitry identification and interpretation, plus practical work on pumps, valves, actuators, and circuits. Successful graduates will be conversant with fluid power and hydraulic theory and capable of examining, testing, adjusting and repairing basic fluid power components.

Industrial Hydraulics — Advanced — 30 hours

Students should have completed Basic Hydraulics or have related trade experience before enrolling in this advanced course designed to familiarize them with industrial hydraulics. Instruction is provided in troubleshooting duties, skills and aids and 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. Graduates should be able to perform hydraulics troubleshooting on both stationary and mobile equipment. Of benefit to mechanics, installers of equipment, and trade specialists such as millwrights or machinists.

Mobile Hydraulics — 36 hours

For heavy equipment mechanics or operators who wish to upgrade their knowledge of hydraulics as applied to forklifts, front-end loaders and stationary equipment. However, the emphasis is on mobile rather than stationary equipment. The object of the course is for students to understand hydraulics, fluids, reservoirs, pumps, motors, valves, hoses and fittings, cylinders accumulators, coolers and schematics, as well as analyse component failures, troubleshoot and perform maintenance diagnosis and testing. Topics include hydraulic principles, fluid and accessories, piping and fitting, pump operation, principles of actuator operations, principles of valve operations, mobile circuits and schematics, power steering, hydrostatic drives, leakage and sealing. Graduates of the course should be able to analyze component requirements, diagnose failures and prescribe solutions.

Machine Shop Operator — 36 hours

Provides a general understanding and practical experience in machine shop operation as well as instruction in the safe operation of machine shop equipment. Training is predominantly hands-on and details the operation of drills, saws and lathes and provides milling experience. Students progress according to their capabilities; shop projects are self-paced and sequentially arranged. Students in related trades such as automotive mechanics who wish to learn to do their own heads and valves on a machine, may also benefit from this course. Upon successful completion, students may undertake an apprenticeship in the machining trade. Advanced level machinist courses such as Tool and Die, CNC Machinist — Level 1, or CNC Machinist — Level 2 would be appropriate.

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. The course is also suitable for general enthusiasts who wish to complete minor automotive repairs and systems analysis. Covers hand tools, automotive fasteners, shop equipment, lubrication, cooling, safety inspection, tire service and exhaust service. Successful completion qualifies students to take courses in steering, suspension and wheel service, brake service, electrical systems, engine tune-up and air conditioning. The course is divided equally between theory, demonstration and shop practice.

Principles of Numerical Controls (NC) for Machine Shop Operators — Level 1 — 48 hours

Allows those interested in machine shop operation to keep up-to-date with state-of-the-art equipment by learning on the latest computerized equipment. 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 of terms used with CNC, writing and debugging CNC programs, entering programs into the machines and editing, setting of tool offsets and use of tool nose radius compensation. Extensive use is made of the Institute's six EMCO training machines as well as the SL3H MORI SEIKI lathe. The course consists of approximately 30% theory and 70% hands-on training including entering and editing programs, as well as setting tools and operating the machine.

Principles of Numerical Controls (NC) for Machine Operators — Level 2 — 42 hours

Offers higher-level instruction for experienced persons performing machining functions by CNC. Students wishing to enrol should have completed Principles of CNC — Level 1, however, related training and/or experience may be assessed by the instructor. The course emphasizes advanced CNC machine shop operations with student computer boards and CNC training equipment. Successful graduates will have a sound theoretical knowledge of the principles of operating machining equipment by computer. A level 3 course is under development.

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 differentials including the component purpose and construction; power flow in conventional and anti-spin differentials; pre-removal checks; proper disassembly and assembly procedures; proper procedures to ensure safe and reliable operation. Will enable successful graduates to list the components in the power train and in conventional and anti-spin differentials, inspect components for wear, describe operating principles and adjust components to manual specifications. Students should be experienced in the trade or in the latter half of an apprenticeship before enrolling.

Machinist TQ Refresher — 60 hours

Provides students with the necessary instruction to enable them to write the provincial Machinist examination. Students should have a working knowledge of machining skills and intend to write the exam. Theoretical instruction is given in safety and covers the regulations for 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.

Millwright TQ Refresher — 60 hours

Provides students with the necessary instruction to enable them to write the provincial Millwright examination. Students should have a working knowledge of milling skills and intend to write the exam. Theoretical instruction is given in general fitting practice; hydraulics, pneumatics and lubrication; material handling; machine components and machine installation.

Small Engine Repair — Basic — 30 hours

Designed for the maintenance and tune-up of small engines: lawn mowers, chain saws and rototillers. Theory and demonstration combined with hands-on experience is given to enable students to undertake the operation, maintenance and repair of small gasoline engines. Students overhaul a small engine in the course. Students are encouraged to bring a lawn mower, chain saw or other small engine which requires an overhaul to the shop.

Tool and Die Maker — Basic — 30 hours

This exploratory course introduces students to the theory and skills of a tool and die maker using present day production methods. Instruction covers jig making, piercing dies, single-double compound and progressive dies and will enable students to perform such skills to acceptable standards. Consists of two-thirds theory and lays a good foundation for the intermediate course, which is primarily hands-on. The course is a good introduction to the CNC machine operator course. Prior to enrolment, students should have had some experience/training in machine shop operation/metal fabrication.

Tool and Die Maker — Intermediate — 48 hours

Builds upon basic tool and die making through intensive, hands-on instruction and practise. The course gives in-depth instruction in jig making, piercing dies, single-double compound and progressive dies and enables students to 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.

Diesel Engines, Automotive — 30 hours

Designed to upgrade automotive mechanics to deal with late model cars and diesel fuel injection systems. The mechanic will diagnose problems in automotive diesel engines by systematically troubleshooting the fuel injection and speed control systems and solve problems by repair, adjustment or replacement of parts. Students will work on Detroit series, Cummins, GM 5.7 L and 3.8 L, Volkswagen Rabbit, Peugeot and Mercedes Benz through a combination of theory and hands-on instruction proceeding to almost exclusively shop work. Students should be journeyed automotive mechanics or at least in the third year of an apprenticeship before enrolling in this course.

Motorcycle Maintenance — 24 hours

For motorcycle owners who wish to perform their own tune-ups, brakes or other servicing and for anyone who works on motorcycles. Comprehensive instruction covers the basic theory of two and four-cycle engines, complete tune-up procedures, disc and drum brake maintenance and electrical troubleshooting. Instruction is primarily in the shop but includes some theory.

Outboard Engine Maintenance — 24 hours

Designed to enable boat owners to service their own engines the course is essentially for the maintenance and tune-up of outboard engines. Instruction is hands-on with supporting theory and includes basic tune-up, troubleshooting and servicing motors, and examination of the fuel and electrical systems of these engines. Successful graduates may find job opportunities with summer resorts, camps or marinas.

Inboard/Outboard Engine Maintenance — 24 hours

A course for the maintenance and tune-up of inboard/outboard engines which has been designed to enable boat owners to service their own engines. Topics include theory, tune-ups, troubleshooting and servicing of motors and outboard units, and examination of the mechanical, electrical and fuel systems of these units. Successful graduates will feel confident about their diagnosis and repair of the inboard/outboard engine.

Non-Destructive Testing

Introduction to Non-Destructive Testing (NDT) — 18 hours

A survey of the field of non-destructive testing. Introduces students to the different types of NDT — radiography, ultrasonics, magnetic particle and liquid penetrant. Certificiation criteria, employment opportunities and training requirements for those seeking careers in NDT are discussed. Prerequisite: Grade 12 math and science.

Refrigeration

Electrical Code For Refrigeration — 60 hours

Instruction is tailored specifically to meet the needs of those working in industrial refrigeration. Examines the electrical code as it pertains to refrigeration including safety, service sizing, motors and wiring practices. Successful graduates of this course are prepared to write the restricted class B Contractor's license. Prerequisite: Journeyman level of understanding for industrial refrigeration.

Domestic Refrigeration — Basic — 45 hours

This is the first of a three-part program in domestic refrigeration. The three parts together cover 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. Upon successful completion of this course, students receive a Domestic Refrigeration Program Certificate. Domestic Refrigeration-Basic 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. Prerequisite: Good mechanical aptitude.

Domestic Refrigeration — Intermediate — 45 hours

Extensive hands-on training provides students with the practical skills they need for service work. By building an actual 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, principles of silver soldering. Prerequisite: Domestic Refrigeration — Basic

Domestic Refrigeration — Advanced — 45 hours

Domestic Refrigeration — Advanced 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. Students apply these fundamental refrigeration laws to practical problems such as calculation to unit size for custom installation. Hands-on instruction is provided for both installation and repair, making this a complete course in room air conditioning units. Prerequisite: Domestic Refrigeration — Intermediate.

Industrial Refrigeration — Basic — 36 hours

The fundamental principles of industrial refrigeration are presented together with demonstrations and hands-on training using industrial trainers. Training is designed to enhance troubleshooting skills and assist students in coping quickly with refrigeration problems. Topics include principles of refrigeration, system components, refrigeration system practices, troubleshooting methods.

Industrial Refrigeration — Intermediate — 36 hours

A continuation of Industrial Refrigeration-Basic which provide instruction on larger and more complex refrigeration systems of all types. Load calculation, custom installations, fulfillment of design and functional criteria and sophisticated troubleshooting methods are taught. Upon successful completion of Industrial Refrigeration-Intermediate, students will be able to diagnose and take corrective action for approximately 80% of system problems. Topics include two stage systems, indirect systems, refrigerants, centrifugal compressors, low and high temperature lubrication, chill water and brine coils, introduction to heat pumps, commercial and industrial dehumidifying systems. Prerequisite: Industrial Refrigeration — Basic.

Refrigeration TQ — Part 1 — 36 hours

Refrigeration TQ-Part 1 is the first of a two part program designed as a complete overview/refresher for industrial refrigeration. Successful completion of both parts prepares students for writing the Trade Qualification examination in refrigeration. Students intending to write the Refrigeration TQ-Part 1 examination are advised to determine their eligibility to write prior to enrolling in the program. Topics include refrigeration theory, reciprocating compressors, condensors, evaporators, flow control devices and accessories. Prerequisite: 3 years experience with industrial refrigeration.

Refrigeration TQ — Part 2 — 36 hours

Refrigeration TQ — Part 1 completes the survey of industrial refrigeration and brings successful students up to TQ 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: Refrigeration TQ — Part 1.

School of Construction and Natural Resource Studies

Construction

Advanced Benchwork (Cabinetmaking and Finishing) — 24 hours

Designed for advanced students this course is a sequel to cabinetmaking. Provides shop space and expert instruction for individual projects. Project selection and materials are the students responsibility. Prerequisite: Previous woodworking course or the instructors approval. Class size is limited to allow for individual instruction.

Benchwork Upgrade — 40 hours

Accomplished cabinet builders and benchwork students will benefit greatly from the individualized training delivered in this course. The self-paced format permits students to progress at their own speed. The instructor will review advanced woodworking skills according to the average level of class competence and build on this with individualized instruction. Each student must design a major shop assignment and supply the necessary project materials based on drawings approved by the instructor. Learning materials are available through the benchwork apprenticeship and upgrading program for individual projects. Class size is limited so students are encouraged to register early.

Blasting — 15 hours

This specialized training will enable persons interested in carrying out commercial or private blasting operations to perform them safely and efficiently. Students will learn the principles of non-electric detonation of explosives and will gather the technical knowledge and hands-on experience necessary to carry out such blasting. The course covers the theory necessary for writing the Workers Compensation Board ticket for non-electric blasting and includes a field trip to perform a one-day line blast.

Blueprint Reading for Construction — 30 hours

Designed for persons working in the construction trades who wish to read blueprints. Students should have some related building trade experience although it is not mandatory. Students learn to complete projects and problem-solve in the classroom. Instruction is given in all aspects of building specifications, including metric conversion, foundations, millwork and scheduling. Successful graduates will understand the structural principles of buildings and be able to read blueprints for architectural construction and related electrical, plumbing and interior finishing.

Cabinet Making — Basic — 30 hours

Of benefit to those who wish to increase their job opportunities by learning new skills. It will also appeal to hobbyists familiar with hand and power tools who are interested in cabinet making. Course content includes cabinet parts and layout, basic joints used in wood construction, standard sizes and construction methods, assembling with glue, preparation for finishing, and the use of router and templates. Furniture design principles plus furniture joints and finishing methods are also studied.

Fibreglass Fabrication and Repair — 24 hours

Persons involved with the fabricating of fibreglass for marine repair, product production or any related application will find this course invaluable. Students are instructed in basic fiberglass fabricating skills through practical shop instruction and demonstrations. Training also deals with fiberglass adhesion theory by reviewing existing commercial products and application techniques.

Traffic Control Training — 6 hours

A short, comprehensive course covering all the skills necessary to meet minimum provincial standards for persons seeking employment as flagging personnel at highway construction projects. Instruction is delivered in a practical setting and includes safety, employer relations, traffic control and on-site responsibilities. Audio-visual aids augment the practical instruction. Developed in co-operation with the Ministry of Transportation and Highways.

Carpentry TQ Refresher — 56 hours

Will provide students with the necessary instruction to enable them to write the provincial carpentry trade qualification examination. Students should have a working knowledge of carpentry skills and intend to write the exam. Theoretical instruction is provided in foundations; concrete form construction; framing; boarding, sheathing and scaffolds; roof construction; exterior finish; interior wall covering; interior finish; stair building; heavy timber construction; carpentry in masonry construction.

Stair Construction — Traditional — Circular — 20 hours

Designed for journeymen carpenters or those with a minimum of two years related trade experience. The course will review mathematics, design, construction and related building codes. Upon successful completion, students will be able to calculate, design and build stairs to building code standards, including circular and simple concrete.

Concrete Formwork — Design and Construction — 24 hours

For carpenters, contractors, those who work with concrete sales-delivery, form rentals, re-bar installation and construction laborers. Instruction will be provided in footings, wall formwork, column formwork, concrete stairs, beams, girders, slabs and concrete technology. Upon completion, successful students will have acquired the theoretical knowledge to identify and apply different types of concrete formwork in both light and heavy construction, and the practical experience to construct a stair and landing project in a loose forming system.

Construction Supervision and Project Management — 24 hours

For persons with competent trade skills in the construction industry who wish to acquire management skills. Thorough instruction is provided in project planning, scheduling, contract development, tendering, quotations, start-up, records, cost control, supervisory skills, and communications. Upon successful comple-

tion of this course, students will have a theoretical foundation in residential, multi-residential, light industrial project supervision, scheduling, contract administration and cost control.

Construction Estimating — Basic — 21 hours

Designed for anyone who provides construction quotations. Construction foremen and managers as well as those considering self-employment in the industry will derive the greatest benefit from this course. Instruction will include types of estimates and their requirements, construction planning, calculating quantities, scheduling and costing. Detailed classroom projects are used to re-inforce learning material. Upon successful completion, persons should be able to cost out a job, bid a quotation and guarantee the price quoted.

Floor Covering: Sheet Goods Installation — 24 hours

Examines the latest installation techniques of a variety of sheet floor covering products. In-depth instruction is provided in layout and pattern matching, fitting techniques, seaming practice, chemical and heat rod seam welding, flash covering, new products and their installation. Successful completion of this course will enable graduates to install a variety of sheet floor coverings.

Carpet Installation — Basic — 24 hours

An introductory, comprehensive course on carpet laying for those seeking employment in the industry. Because this business can be undertaken with relatively small capital investment, the course is suitable to students taking training for self employment. Students are given hands-on training in the use of tools and application methods as well as theoretical instruction about fabrics and related information. Successful graduates will have learned professional applications, unit pricing and job estimating. There is no prerequisite but students should be in good health.

Framing, Roofing and Layout — 28 hours

West-coast framing and layout is covered in this course which is designed for students with little or no practical experience as carpenters. Essential skills for careers in carpentry and residential construction are taught at an on-site building which simulates an industrial setting. Students will construct a basic residential shell therefore some physical activity is required; the program is approximately two-thirds hands-on. Successful graduates will have a complete theoretical understanding of traditional framing and will be capable of performing some assembly skills.

Furniture Finishing and Refinishing — 12 hours

This general interest course will appeal to students with little or no experience in furniture finishing. It is suitable for hobbyists as well as furniture manufacturers. Students will learn the theory and skills to refinish a sizeable project. Instructor's demonstrations are coupled with practical experience in various refinishing techniques, applications to new wood and French polishing. The use of various oils, resins and surface coverings is examined.

Introduction to Glazing — 12 hours

For individuals who wish to learn glass cutting and basic glazing skills. Of interest to students who are considering an apprenticeship in the trade or related construction trades. Content includes cutting glass, finishing glass, placement, aluminum frame assembly, door systems and wall systems. Upon successful completion of the Glazing — Basic course, students will know how to cut and finish glass.

Finishing Carpentry — 30 hours

Will enable established carpenters to complete interior residential finishing to professional standards. Recommended for students who are carpenters or for those who have worked in the trade for more than three years. Essential skills include door hanging, window installation, cabinet installation, material finishing and the application of various hardware. Students learn by working on shop assignments and should have a sound knowledge of the proper use of carpentry hand and power tools before enrolling in this course.

Masonry and Bricklaying — Basic — 32 hours

This introductory, hands-on training is designed for students who wish to learn basic masonry and bricklaying skills. About 60% of the training is practical and includes proper use of hand tools; 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.

Painting and Decorating — Levels 1 and 2 — 48 hours: 2 x 24 hours

Persons with little or no experience in the painting industry may learn pre-apprenticeship-level skills and become employable in the trade. Level 1 is approximately 50% theory and 50% practical with emphasis on developing a sound foundation for career oriented students. Level 2 provides a practical follow-up for successful students and simulates working conditions. The instructor will incorporate classroom instruction and demonstrations to develop student skills to that of a professional apprentice painter, able to work independently with little or no supervision. The application of advanced wall coverings, wood finishing, graining and general painting are covered. Students with considerable trade experience may enter directly into Level 2 upon confirmation by the instructor, during the first session.

Painting and Decorating — Basic — 32 hours

Persons with little or no practical experience will learn fundamental skills applicable to industrial painting. The course covers theory, safety and practical skills development. Students will complete shop projects as well as written assignments. Upon completion, the successful graduate will be qualified to seek employment at an apprentice level in painting and decorating or may take advanced courses in wall covering, spray painting and estimating.

Painting Estimating — Commercial — 20 hours

For experienced painters who wish to become competent in residential and light commercial painting estimating this advanced course. Curriculum covers unit pricing, cost takeoffs, contract submission. Final grades are determined by the submission of a project as well as class participation, which includes practical estimate projects. Upon successful completion of this course, students should be able to price small- and mid-sized painting projects accurately to professional trade standards. Suitable for persons who show entreprenurial initiative and ideal for competent painters who require to estimate jobs accurately.

Painting TQ (Theory) — 48 hours

Provides experienced students with the theoretical instruction to enable them to write the provincial painting examination. Students should have a working knowledge of painting skills. Theoretical instruction is given in basic components of paint and color

mixing, basic tools and equipment, surface preparation of interior and exterior surfaces, procedures for application of coatings by brush and roller, safety regulations, paint failures, natural wood finishings including staining and graining, wall coverings, spray painting and related equipment, corrosion control and industrial coatings, and trade mathematics.

Transit and Level — Basic — 21 hours

Offers introductory instruction in the operation of level and transit as applied to construction layout, pipe layout and note keeping. As the construction industry becomes more active there will be increased demand for skilled workers. Hands-on training will give students an advantage when competing for such opportunities as they will have learned the operation of a transit and level through actual practice. Prerequisite: Grade 10 math.

Transit and Level (Upgrade) — 21 hours

Transit and level students will find advancement possible from the knowledge and practice gained in this course. The instructor will review basic theory and evaluate each student's skills in order to provide individualized instruction. The course instructs students in trigonometry, problem solving and proper layout methods for transit and level, advanced layout for construction, piping and related trades. This course is not intended to produce surveyors, but to upgrade those who must use transit and level as part of their job requirements. Suitable for carpenters, ironworkers, layout foremen, road builders and excavators. Graduates will be able to do advanced layout on the transit and level to professional standards. Prerequisite: Students must have completed the basic course or have equivalent field experience before enrolling.

Residential Building Procedures — 18 hours

Focuses on the planning, estimating and construction of new single or multi residential units. Designed for owners, first time builders or novice carpenters. This course reviews all phases of wood frame construction, finishing, cost control and on site supervision. Students are encouraged to utilize a proposed new residential building or renovation project for learning purposes.

Industrial Rigging and Safety — 24 hours

Designed for participants with limited or non-existent rigging and signalling experience. The course starts with a comparison of the two main types of cranes in heavy construction culminating with a comprehensive evaluation of all rigging and signalling procedures necessary for their safe and efficient operation. It identifies crane abilities and limitations, proper signalling procedures, proper rigging procedures (includes reeving, splicing and knot tying fundamentals), sling and sling accessory inspection and evaluation techniques and on-the-job safety procedures. Enables participants to explain the general workings and limitations of conventional and tower cranes; direct cranes confidently and effectively under any type of hoisting condition; calculate the safe working load for all lifting devices; inspect slings and sling accessories for wear; evaluate the correct rigging, lifting and transportation procedures for all lifts; explicate the fundamentals of splicing and knot tying; carry out all assigned rigging tasks safely and efficiently. Participant will pass both a written and practical examination.

Complete Commercial Spray — 20 hours

Students who understand painting theory and have some practical experience and maintenance engineers, manufacturers and ironworkers, will find this upgrade course useful. Topics include industrial health and safety; spray painting theory; air — pressures and volumes; paint and coating measures; air compressor operation; equipment assembly and maintenance, paint failures, causes and cures; practical application; spray booths, functions and types. Upon successful completion, students will be aware of professional standards and capable of working under supervision.

Wall Covering Applications — 24 hours

Designed to introduce experienced painting students to professional wall covering techniques. The course reviews surface preparation, material selection, application procedures and production methods for commercial projects. Students will practice hanging wall covering in shop assignments. The course includes material costs.

Steel Stud Construction — 16 hours

Designed for persons with a minimum of two years experience in building construction. Students are expected to have a basic understanding of traditional West Coast framing and construction methods. The course covers steel stud construction techniques, layout and assembly to building code. It is equally divided betweeen theory and shop practicals. A certificate is provided upon successful completion.

Residential Roofing Application — 24 hours

This short course covers roofing applications for asphalt shingles, cedar shakes and fabricated aluminum. Suitable for experienced carpenters and builders who want to be able to complete typical residential improvements, repairs and re-roofing. Upon successful completion, students will be able to do commercial estimates and apply roofing to trade standards. The course will not include full-scale shop projects. Instead, modular components will be completed on an individual basis for practical training. (50% theory — 50% practical).

Cedar Shake Roofing — 16 hours

Individuals interested in learning how to apply cedar shake roofing will learn the knowledge and skills necessary to do the job properly in this short, specialized course. Of benefit to journeyed carpenters, carpentry apprentices and do-it-yourself homeowners. There is no prerequisite but students should be able to work well with carpentry hand tools. In addition to the hands-on training in the installation of shakes, the course includes roofing theory application procedures, estimating and water runoff.

Drywall Installation and Finishing — 24 hours

Covers the basic drywalling skills required by the construction industry — layout and application, estimating, taping tools, airless paint machines and contour shaping. Hands-on experience will be gained through mock-up assignments. Graduates will be capable of remodelling basements or complete homes and installing drywall in homes.

Vinyl Siding Applications — 16 hours

Designed for manually skilled individuals interested in learning how to apply siding for the purpose of increasing carpentry skills or earning a supplementary income, and homeowners and do-it-your selfers. The course utilizes — the Institute's telecourse study guide and video resources from the How to Install Vinyl Siding program. Content includes materials and accessories, estimating, tools, safety, preparation and application procedures.

Log Building Construction — 67 hours

Offers practical experience through the erection of a small building, using saddle notch building techniques. Provides an introduction to the designing and blueprinting of log building construction. Practical instruction is held off campus and includes the use of tools and equipment, design techniques, making founda-

tions from wood, framing, roofing, stairs, cutting for windows and doors. Students must provide their own chain saws. Although there is some career potential for log building construction, the course is designed primarily for landowners who wish to construct their own log buildings.

Log Grading and Scaling — 160 hours

Assists persons with little or no experience in scaling to become provincially certified log scalers and graders. Passing the final examination is the first step toward becoming a scaler and, through practical experience, students will acquire more speed, knowledge and confidence. Includes instruction in determining species and measuring diameters and lengths emphasizing the Log Scale; how to recognize defects from surface indications and make adjustments to diameter and length for them; making out tallies and summaries of scale; grading rules and circular letters for log grades; registered timber marks and their significance as well as check scales; sawmill studies, scaling minor forest products, the cubic foot scale, general properties and uses of Coast species; the Forest Act and regulations which affect log scaling.

Sign Painting — Basic — 60 hours

Ideal for painting and decorating apprentices and pre-apprentices who wish to brush up on the various aspects of sign painting. Extensive instruction is given in basic alphabets and layouts. Surface preparation, brush techniques, silk screening and safety regulations are also examined. Upon successful completion of the course, students may operate their own sign painting business or seek employment with existing operations.

Sign Painting — Upgrade — 24 hours

Persons employed in the sign painting industry for at least a year or recent graduates of Sign Painting — Basic should enrol in this course. Provides essential upgrading for persons presently in the sign painting business and advanced techniques and applications not covered in the basic course. Students will learn advanced lettering techniques and other advanced instruction to attain required professional standards. This will be accomplished by completing individual projects agreed to with the instructor. All materials required for this course are supplied.

Drafting

Drafting — Basic — 42 hours

Those who wish to express creative ability should explore a career in drafting by enrolling in this introductory course. Provides a foundation in basic drafting including equipment and tools, line work, lettering, applied mathematics, plane geometry, orthographic projection, dimensioning, sections, charts and graphs. Will prepare students for careers in drafting or for further drafting studies. Students will be expected to complete an example of an achitectural project, a civil project, a mechanical project and a structural project. They will also be introduced to computer-assisted design (CAD).

Drafting — Advanced — 42 hours

Expands on the basic drafting course and allows students to progress into their desired drafting specialty, including architectural, civil, mechanical and structural. Students pursue one of these in-depth, touching on the others as they interrelate. Part of the required project for this course will be produced on a computer. The basic and advanced drafting courses will provide successful students with an overview of the parameters affecting building design and construction.

Industrial Rendering and Drawing — 30 hours

Of value to practising interior designers, drafters and those in related fields, this course will assist potential interior designers to assess creative abilities for a possible career. Provides an opportunity for the layman to study interior design from a graphic viewpoint. Industry experience is recommended before taking this course. Course content includes demonstrations and lab assignments covering sample boards, renderings, sketches, floor plans, elevations, projections and lettering. A variety of media and materials will be explored. Experiments in residential and commercial space will be presented graphically in course projects.

Introduction to Computer Assisted Drafting (CAD) (seminar) — 10 hours

Examines the essential concepts of CAD. Anyone with career aspirations in drafting will need this seminar to keep pace with changing technology in the field. Discusses the computer's distinguishing characteristics, attributes and shortcomings. Dowco's Holguin Ceads-Cadd System operating on a Hewlett-Packard HP 1000 minicomputer will be compared to other mini, micro and mainframe CAD systems. Class size is limited to ensure students hands-on time and to enable them to complete a simple sketch for plotting, by the completion of the seminar.

Piping, Plumbing and Gas

Air Conditioning — Basic — 30 hours

This exploratory course provides a foundation in basic air conditioning and refrigeration theory through a combination of classroom and shop instruction which includes maintenance, troubleshooting and minor systems design projects. For persons wishing to pursue a career working with air conditioning and building service workers/physical plant personnel to advance their careers. Students should have a general understanding of air ventilation/refrigeration equipment before enrolling in this course. Graduates will be able to assess and prescribe equipment requirements as well as perform troubleshooting and repairs.

Blueprint Reading for Piping — 30 hours

This theoretical course will help piping trades personnel who are moving toward supervisory roles or wish to otherwise advance their careers. Designed for students who are familiar with piping and have had some experience in the industry. Topics include reading drawings, project drawings, specifications, standard details, drawing co-ordination, sketching, sleeve and deck layout, piping drawings. Graduates will understand blueprints as they relate to the piping trades and know how to apply them.

Cross Connection Control — 24 hours

Designed for persons involved in the installation and maintenance of backflow prevention devices for pollution of domestic water supply. The successful completion of a final examination will certify students as trade specialists in this area. Students will be able to assess the inter-connection of hazardous equipment and situations involving the pollution or contamination of water supply systems, and take the appropriate preventive action. Definitions, regulations, types of cross connection controls and locations where cross connections occur will be covered.

Domestic Gas Appliance Servicing — 30 hours

Persons involved with the installation or maintenance of domestic appliance equipment are required to complete this course successfully. Graduates will be awarded a provisional ticket enabling them to perform domestic gas servicing and installations. The ticket is contingent on the student having been employed in the industry for one year. Instruction covers atmospheric gas burners, orifice sizing, domestic ranges, dryers, refrigerators and the regulations governing these appliances.

Gas Fitter — B License (previously grade 1) — 84 hours

This course is a requirement of the Ministry of Labour Gas and Safety Branch for students wishing to write the examination to qualify as a Gas Fitter — B license. Comprehensive instruction is provided in the history and types of gas; 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 and includes off-campus visits to B.C. Hydro's training facilities. Upon entry to this course, students should confirm their final examination requirements with the Ministry of Labour Safety Engineering Services division; phone 879-7531.

Gas Fitter — A License (previously grade 2) — 150 hours

This course is a requirement of the Ministry of Labour Gas and Safety Branch for students wishing to write the examination to qualify as a 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 procedure, 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 and includes off-campus visits to B.C. Hydro's training facilities. Students must have had a B license for a minimum of two years to qualify for A license. Prior to taking this course, students should confirm their final examination requirements with the Ministry of Labour Safety Engineering Services division; phone 879-7531.

Gas Grade 2 Fitter — Math and Science — 48 hours

Provides the math and science background necessary to enable you to pass the Gas Fitter A licence examination. In order for a student to write the provincial Gas Fitter A licence exam he must have held a valid Gas Fitter B license for a period no less than two years. Mathematics instruction includes algebra and formulas while science instruction deals with electricity and chemistry.

Industrial Ventilation — 30 hours

Examines how to control airborne contaminants and heat stress in industrial ventilation systems. Of interest to mechanical contractors, industrial safety officers, and those involved in the design, installation or evaluation of industrial ventilation systems. Graduates will be able to design basic industrial ventilation systems to acceptable standards. Topics include fundamentals of air flow, general ventilation, ventilation for heat stress, hood design principles, specific operations of hood designs, duct sizing and design, fans, air cleaning, make-up air, legal requirements and air flow measurements.

Plastic Pipe Fusion for Gas Fitters — 7 hours

Students are trained to use specialized equipment in the joining of plastic piping in this short, intensive course. Designed to upgrade gas fitters to work with plastic pipe, using state-of-the-art equipment and technology, however, anyone who works with plastic as a piping medium will benefit from this course. Instruction covers the knowledge and skills necessary to operate and maintain the equipment used in the fusion of plastic pipe. Graduates will understand the special procedures for different piping products and how they vary with weather and temperature.

Plumbing — Residential — 24 hours

This general interest course will appeal to homeowners with do-it-yourself aptitude and will provide sufficient skills for graduates to feel confident about the quality of their workmanship. Topics include drainage systems, water systems, fixture selection and installation, etc. regulations, materials and blueprints. Two hands-on sessions deal with the cutting and soldering of plumbing materials. Graduates will understand the basic plumbing system within residential standards and know how to diagnose and repair minor problems, and install minor fixtures and plumbing additions to residential systems.

Plumbing TQ Refresher — 60 hours

Provides students with the necessary instruction to enable them to write the provincial Plumbing examination. Students should have a working knowledge of plumbing and intend to write the exam. 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.

Plumbing — Estimating — 60 hours

For plumbing or supervisory administrators who wish to be proficient in cost estimating. Students should have a basic knowledge of plumbing theory. Upon completion, gradutes will be able to prepare competitive bids on residential and light commercial projects. The course covers an introduction to drawings, structure, architecture and mechanics and how they are compiled; an introduction to basic estimating, take off plumbing, take off plumbing labour, complete quantity sheet; take off mechanic laboratory, complete quantity sheet; pricing materials in labour, summary preparation and percentage calculations, overhead, costing, planning.

Process Piping Layout and Design — 36 hours

For students interested in pursuing a career in process piping layout and design. The course instructs students in the drafting and basic fundamentals of process piping techniques using short lectures, discussion and exercises in orthographic projection, isometric detailing, component dimensioning and material take-off, plus drafting. The free hand sketch method for isometrics is used extensively.

Propane Tank Filler (Certification) — 8 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. Upon completion, students receive a certificate of completion for display at their place of employment, as well as a wallet sized card.

Steamfitter TQ Refresher — 60 hours

Provides students with the necessary instruction to enable them to write the provincial Steamfitting examination. Students should have a working knowledge of steamfitter skills and intend to write the exam. Theoretical instruction is given in pipe work, hot water systems, controls and valves, low pressure systems, maintenance and repair, high pressure systems, and pumps.

Steel and Welding

Blueprint Reading — Welding and Steel Fabrication — 30 hours

Designed to upgrade welders skills and job opportunities. Training covers all aspects of blueprint reading as it applies to welding. Provides students with the of knowledge required to read fairly complicated structural drawings and to apply these instructions to the material used to complete a structure. Sessions are assignment-intensive and begin with progressive open-forum discussions coupled with assignments bearing directly on those discussions. An advanced course follows for students who require higher level training.

Oxyacetylene Welding — 24 hours

Students in this course will learn sufficient welding skills to weld with oxyacetylene equipment whether they wish to pursue a professional trade or are hobbyists with their own equipment. Successful students will learn how to weld light gauge steel and small gauge pipe and weld/braze cast iron. Instruction is also given in the care of equipment, safety and safety standards. The course may be credited for training endorsement when the student maintains a registered welders log book.

Plate and Pipe Development for Steel Fabrication — 36 hours

Students will learn the three methods of plate and pipe development for steel fabricators through a series of theoretical and practical sessions. Of benefit to welders and fabricators with a basic understanding of fabrication who wish to upgrade their skills for advanced projects and design. Classroom instruction focuses on making templates while shop experience will use those templates to shear, burn, form and tack plates together to make an elbow and a square to round.

Sheet Metal — Basic — 24 hours

An introductory course in sheet metal fabrication and shop work for employees of sheet metal shops or those seeking employment in this field. Instruction is about two-thirds shop and one-third classroom, and includes blueprint reading, simple layout, shop calculations, soldering and brazing. Students who complete this course may enrol in the second level sheet metal course where instruction is almost all hands-on and includes pattern making. Students should be familiar with or experienced in metal work, machine shop operations or sheet metal work before enrolling in this course.

Stainless Steel Kitchen Equipment — 39 hours

For students with an employment background in sheet metal who wish to learn to fabricate and build stainless steel kitchen equipment. The course may lead to career-oriented employment in the making, repairing and installing of such equipment if related training in welding and plumbing is taken. Students learn the characteristics of stainless steel, tools and techniques used to work and polish stainless steel, countertop edges and layout, typical stainless steel cabinet layout, all coved stainless steel sink bowl layout, typical pot sink layout, condensate and convection hoods layout. Tungsten inert gas (TIG) welding of stainless steel is included.

Steel Fabrication — Basic — 42 hours

Reviews the theory and practical requirements of steel fabrication. The course focuses on mathematics, pattern development, blueprint reading, welding and 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.

Steel Fabrication — Estimating — 36 hours

Offers those with a practical background in steel fabrication a basic understanding of steel fabrication estimating. Instruction details all phases from material take-off to erection of a project. Students should have shop experience, be able to read blueprints and have a basic understanding of math before enrolling in this course. Upon successful completion, students will be able to obtain plans and specifications, complete material take-off, understand pricing, labour costs, project material cost and be able to maintain costing records. Several practical assignments provide experience in steel fabrication estimating for industry projects.

Structural Steel Design — Basic — 36 hours

For draftsmen and technicians with limited background in structural theory. Will help students understand the design criteria and CSA S16 requirements in both limit states design (LSD) and allowable stresses design (ASD) methods. Upon successful completion of the course, students will understand the different approaches and code requirements in LSD and ASD methods and be versed in the application of simple formulas to obtain critical member forces, design members subjected to axial tension or compression, bending and combination of axial and bending in accordance with CSA S16, and be able to design simple welded or bolted connections.

Tungsten Inert Gas (TIG) Welding — 32 hours

Provides both theory and practice for welders who wish to become proficient in TIG welding used extensively in the welding of aluminum and stainless steel. This upgrade course may provide greater job opportunities to persons working with these metals. Students should have basic arc welding and understand arc welding theory before enrolling in this course. Students will understand the trade standards and requirements upon successful completion of the course. The course can be credited for training endorsement when the student is maintaining a registered welders log book.

Gas Metal Arc — Flux Cored Arc — 60 hours

Students will learn how to set up and operate manufacturers gas metal arc or flux cored arc welding power sources. Practical training covers welding plate (gauge to unlimited thickness) in all positions, utilizing fillet and v-butt welds, welding pipe in rolled and fixed positions. All welding will be to CSA and ASMe code level.

Welding — Basic — 40 hours

An ideal course for inexperienced welders to learn different types of welding using various metals. Successful students will understand the various types of welding machinery and be able to identify and use various electrodes in flat, vertical, horizontal and overhead positions; the various types of joint geometry and blueprints associated with welding and the safety aspects of the welding shop. Instruction is primarily hands-on and includes classroom theory, shop demonstrations and films. The course can be credited for training endorsement when the student is maintaining a registered welders log book.

Welding — Upgrade — 40 hours

Allows welders to work one-on-one with the instructor for individualized help with any aspect of welding. The course is designed to help students prepare for welding examinations for certification. Students will have a good understanding of the requirements of the particular welding certification examination they plan to write. Students are advised to confirm testing eligibility with the Welding Bureau or the Ministry of Labour. Welders should have a minimum of one years experience welding heavy gauge metals before enrolling in the course. The course can be credited for training endorsement when the student is maintaining a registered welders log book.

Welding TQ Refresher — A Level — 36 hours

Provides experienced students with the necessary instruction to enable them to write the provincial certification exam to A level. Theoretical training covers RK9 — metallurgy 3, RK10 — blueprint reading 3. The theory of SMAW advanced and GTAW pipe and various alloys is discussed.

Welding TQ Refresher — B Level — 36 hours

Provides experienced students with the necessary instruction to enable them to write the provincial certification exam to B level. Theoretical training covers RK5 — welding quality control and inspection, RK6 — welding codes, standards and specifications, RK7 — blueprint reading 2, RK8 — Metallurgy 2. The theory of GMAW, FCAW, GTAW and safety is covered.

Fundamentals of Welding Technology (Welding Institute of Canada) — 48 hours

The welding industry recognizes this course as a requisite for various codes and standards. It is particularly beneficial for those seeking supervisory positions within the industry. A diploma is awarded by the Welding Institute of Canada to students who pass the closed-book final examination. Twelve modules are contained in the course: health and safety, basic joints, blueprint reading and preparation, symbols for welding, welding processes and equipment, power sources for welding, electrodes and consumables, distortion and residual stress, basic metallurgy and material specification, basic welding and metallurgy of structural steels, weld faults and causes, basic inspection technology, mechanical testing of welds. Training is theoretical but includes shop observation. Considerable home study and assignments can be expected. **Please note:** A welding manual priced approximately $150 will be required.

Welding Inspection and Quality Control (Welding Institute of Canada) — 36 hours

Designed to upgrade welders to welding supervisors. A national diploma is awarded by the Welding Institute of Canada and is of special value to future welding supervisors or inspectors. Topics include basic concepts of quality control and inspection; survey of weld testing; visual inspection of welds; factors affecting weld quality; arc welding faults; mechanical inspection and testing of welds; liquid penetrant testing; chemical and metallographic inspections; magnetic particle testing; radiographic inspection principles and interpretation; radiographic inspection; codes; ultrasonic inspection; concepts, methods and weld testing; ultrasonic inspection, codes, practices and certification, codes, specifications and standards; welding inspection qualification. This theoretical course will require considerable home study time. **Please note:** Students will require a manual price approximately $130.

Industrial Rigging and Safety — 32 hours

Designed for participants with limited or non-existent rigging and signalling experience. Compares the two main types of cranes prominent in heavy construction and delivers a comprehensive evaluation of all rigging and signalling procedures necessary for safe and efficient operation. It identifies crane abilities and limitations, proper signalling procedures, proper rigging procedures (reeving, splicing and knot-tying fundamentals), sling and sling accessory inspection and evaluation techniques and on-the-job safety procedures. The course will enable participants to explain the general workings and limitations of conventional and tower cranes, direct cranes confidently and effectively under any type of hoisting condition, calculate the safe working load for all lifting devices, inspect slings and sling accessories for wear, evaluate the correct rigging, lifting and transportation procedures for all lifts, explicate the fundamentals of splicing and knot-tying, carry out all assigned rigging tasks safely and efficiently. Participants will pass both a written and practical examination.

Autobody — MIG Welding — 24 hours

This specialty course provides upgrading training for persons employed in the autobody repair industry as well as students studying autobody repair who require additional training in MIG welding. Taken together with Continuing Education's two-part autobody repair course, this course gives students a good foundation for employment in the autobody repair industry. Students in the course use MIG welding equipment to perform rust repair or other metal replacement to late-model vehicles.

Blueprint Reading for Welders — Advanced — 30 hours

A continuation of the basic course, designed to further upgrade welders' skills and employability by dealing with more complicated aspects of layout. Sessions will begin with progressive open-forum discussions and be followed by assignments bearing directly on those discussions. Practise will augment instruction so that students will be capable of immediately recognizing the process required. Upon successful completion of the basic and advanced courses, students will be able to lay out and assemble, with speed and accuracy, almost any work in a conventional shop.

Reading Shipyard Blueprints — 36 hours

Designed for shipyard employees who wish to expand their knowledge of ship building, types of vessels, parts of ships, shipyard blueprints, symbols and abbreviations, structural terminology, line drawings and computer-assisted drawings. Graduates of this course will not become marine engineers, but will be familiar with all aspects of building modern ships:tow boats, barges, ferries, freighters, fishing vessels, tankers, ice breakers, etc. Successful students will be able to read and interpret any marine structural drawing and operate in any shipyard with minimal supervision. The course is assignment-intensive and comprises open-forum discussions on the subjects and ends with home assignments for individual sessions.

Technical Appliance Repair

Appliance Repair — Part 1 — 30 hours

This is the first of a four part program in appliance service. The four parts cover most major household appliances, including microwave ovens. Upon successful completion of all four parts of this program, students will receive an APPLIANCE REPAIR PROGRAM CERTIFICATE. Appliance Repair Part 1 covers the fundamentals of electricity as they apply to household appliances. Topics include electrical safety, resistance, voltage, current, inductance, capacitance, magnetism and electrical laws. Hands-on training with multimeters and laboratory circuits provide a practical foundation for classroon lectures.

Appliance Repair — Part 2 — 30 hours

Training centres upon the construction and function of electronic circuits in modern appliances. Students build voltage regulators and engage in sufficient labwork to give them a working knowledge of diodes, zeners, transistors, LEDs and regulators. The instruction and lab work will provide students with an understanding of the most common electronic components in household appliances. Prerequisite: Part 1 (or equivalent knowledge).

Appliance Repair — Part 3 — 30 hours

Appliance Repair Part 3 applies the circuit knowledge gained in Parts 1 and 2 to major household appliances. Topics include: reading schematics, appliance circuitry, mechanical systems, ranges, including self-cleaning systems; dryers, with standard and electronic control; dishwashers, laundry circuits, including timers and mechanical systems; customer relations. Upon successful completion of Appliance Repair Part 3, students will be able to work safely upon most major household appliances (except for refrigerators) and to analyse and correct most common faults. Prerequisite: Part 2 (or equivalent knowledge).

Appliance Repair — Part 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. Successful students will be able 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: Part 3 (or equivalent knowledge).

Horticulture

Professional Floristry Design — 48 hours

For persons interested in professional floristry design. 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.

Floristry — Design Upgrade — 36 hours

Instruction and practical training will benefit students who wish to expand and update their knowledge of floristry design. Types of designs covered in this course will be European influences, parallelism, contemporary, new conventions. Theoretical instruction will be supported by hands-on training. Floral materials will be supplied.

Christmas Floral Arrangements — Professional — 24 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, corsages. Flowers will be supplied. Successfull completion of the course enables students to create the various arrangements.

Introduction to Horticulture — 30 hours

Those employed in ground maintenance will find the knowledge gained in this introductory course essential to their careers; 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; understanding of soil management and care, plant propagation, organic gardening techniques, winter flowering shrubs, greenhouses and coldframes, bulbs, difficult and rare plants.

Landscape and Garden Design — 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 opporunities 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.

Pesticide Control — 24 hours

Offers students who must write the Provincial Pesticide Dispensers examination, as required by the Pesticide Control Act, the necessary knowledge to complete the examination successfully. Theoretical instruction is given in all facets of pesticide control which will be required for the examination. Students must be 19 years of age and pay $10 to write the examination. Those who pass will be certified and licensed to dispense pesticides in one or more of nine different categories.

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 simply 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.

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 about growing 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.

Apiarist Training — 16 hours

Become a honey farmer for fun or profit. This short, specialty course will provide students with the necessary knowledge of bee keeping to enable them to establish and maintain a small apiary. The course covers disease recognition and treatment, honey flow, swarm control, and packaging. Field trips and guest speakers are utilized in the instructional process.

School of Health Sciences Studies

Industrial Safety — First Aid

Introduction to CPR — Heartsaver — 3 hours

This introductory course in cardio-pulmonary resuscitation is ideal for persons with no previous experience in CPR. It acquaints students with the risk factors associated with heart disease and methods to reduce those factors; signals for action when a person is thought to be experiencing a heart attack are explored. Instruction includes how to activate the emergency medical services network, perform one-person CPR on a training mannequin and manage a conscious person with an obstructed airway.

Introduction to CPR — Lifesaver — 5 hours

Expanded course in CPR builds on the foundation laid in Heartsaver and is designed for persons with previous CPR experience. Instruction focuses on one- and two-person CPR plus airway obstruction for conscious/unconscious adults and infants, infant resuscitation, signals and action, risk factors and activating the emergency medical services network.

Standard First Aid — St. John — 20 hours

A comprehensive safety-oriented first aid training course offered to anyone over the age of 16 who is in good health and wishes to deal with emergencies in a non-professional capacity. Students will learn how to interpret symptoms of illness and injury, assess priorities in emergency situations, start rescue-breathing, stop bleeding, treat choking, fractures and other injuries. CPR is not included in this course. The Standard First Aid — St. John course is a prerequisite for such courses as Early Childhood Education, Registered Nursing, the Marine Institute Mates Ticket and for some athletic and industrial programs. Students who pass the final examination are awarded a nationally recognized certificate which is valid for three years.

Survival First Aid — 4 hours

Those who may be required to deal with injuries in emergency situations until professional help arrives will gain the knowledge and confidence to deal with those situations effectively. The course teaches students how to handle breathing problems, bleeding and unconsciousness through a variety of teaching methods. Designed by the Workers' Compensation Board, certificates are awarded by the WCB to successful graduates.

Trauma First Aid — 7 hours

State-of-the-art equipment and the latest techniques for ambulance attendants are detailed in this comprehensive one-day course. Instruction is geared toward first aid respondents who have been in the workforce for a number of years and require upgrading. The overall purpose of this course is to review information in patient assessment, upgrade skills in pre-hospital trauma care and analyze recent developments in these fields; provide practical hands-on application of this information. Of benefit to industrial first aid attendants, first aid officers, ambulance attendants (EMA 1), police officers, fire service personnel and other first aid responders.

Auto Extrication — One day, usually about eight hours

Students are trained to remove persons from automobiles involved in motor vehicle accidents without causing them further injury. Will appeal to fire fighters and other professional rescue personnel. Students who enrol in this course are expected to be versed in first aid procedures. Training will enable students to assess the situation and diagnose potential injuries, then perform appropriate techniques for opening the car. Instruction includes a seminar, followed by hands-on experience ripping open wrecked cars. Although a minimum of equipment is utilized, students are taught the intricacies of the latest equipment including the jaws of life.

Industrial First Aid — 60 hours

Offered in co-operation with the St. John Ambulance Society, training includes air passage obstruction, cardiopulmonary resuscitation, hemorrhage control, wound care, fracture management and recognition of major injuries. Upon completion of the course, students will be examined for certification by the Workers' Compensation Board.

Industrial First Aid (Maple Ridge) — 60 hours

Offered in co-operation with the Maple Ridge First Aid Training School, training includes air passage obstruction, cardiopulmonary resuscitiation, hemorrhage control, wound care, fracture management and recognition of major injuries. Upon completion of the course, students will be examined for certification by the Workers' Compensation Board.

Transport of Hazardous Goods for Drivers — 7 hours

The "Transportation of Dangerous Goods Act" will be covered with respect to the rules and regulations that drivers transporting hazardous materials must comply with. The subjects covered will be safe truck operation, classification, labelling and placarding of dangerous goods, regulations and regulatory agencies, characteristics of dangerous goods, contingency planning.

School of Management Studies

Professional Certificate Programs

Court Reporting — 3 Year Certificate Program

This program is three years in length, consisting 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 stenograph 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 — Part 1 and Part 2 — 78 hours (part 1: 30 hours; part 2: 48 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.

Legal Assistant Certificate — 60 hours

The legal assistant program is for those students who have completed both parts of the legal steno/typist program or have at least three years legal experience. The course is designed to provide the knowledge required for employment in the management of a law firm.

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. The MOA — Clinical Procedures 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 a comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete the MOA Clinical Procedures course, plus MOA — Office Practice, MOA — Terminology, MOA — Anatomy and Physiology, and MOA — Medical Transcription.

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 a comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete the MOA — Office Practice course, plus MOA — Clinical Procedures, MOA — Terminology, MOA — Anatomy and Physiology, and MOA — Medical Transcription.

Medical Office Assistant — Terminology — 42 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 a comprehensive medical office assistant certificate program. A medical office assistant certificate is presented to students who successfully complete the MOA — Terminology course, plus MOA — Clinical Procedures, MOA — Office Practice, MOA — Anatomy and Physiology, and MOA — Medical Transcription.

Medical Office Assistant — Anatomy and Physiology — 36 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 a comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete the MOA — Anatomy and Physiology course, plus MOA — Clinical Procedures, MOA — Office Practice, MOA — Terminology, and MOA — Medical Transcription.

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, doctor's offices, hospitals and other medical areas needing more 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 assistance environment. This is one of five courses in a comprehensive medical office assistant certificate program. A medical office assistant (MOA) certificate is presented to students who successfully complete the MOA — Medical Transcription, MOA — Anatomy and Physiology course, plus MOA — Clinical Procedures, MOA — Office Practice, and MOA — Terminology.

Word Processing — Level 1 (Wang) — 60 hours

Students with a minimum typing speed of 45 wpm can learn the basics of word processing in this hands-on course using state-of-the-art equipment-Wang and IBM. Learn to create, edit, print and file documents for business applications; including inserting, deleting, copying and moving text, creating headers and footers, automatic hyphenation and pagination and merging documents to be printed. This is the first of a three-part word processing certificate program

Word Processing — Level 2 (Wang) — 30 hours

This is the second of the three-part word processing certificate program. Level two commences with a refresher of basic skills followed by instruction in complex editing, sorting, setting up and using glossaries and batch work. Prerequisite: Word Processing — Level 1.

Word Processing — Level 3 (Wang) — 30 hours

This is the third of the three-part word processing certificate program. A refresher of basic skills is followed by expanded instruction in the use of glossaries and the math pack. Students will also learn the fundamentals of decision procedures and software. Upon successful completion of Word Processing — Levels 1, 2, and 3, students will be able to perform almost any function on a Wang word processor and be employable as word processing operators.

Word Processing — Level 1 — 60 hours

Students with a minimum typing speed of 45 wpm can learn the basics of word processing in this hands-on course using CPT and Olympia state-of-the-art equipment. This is the first of a three-part word processing certificate program. Learn to create, edit, print and file word processing documents for business applications including inserting, deleting, copying, and moving text as well as creating headers and footers, automatic hyphenation and pagination and merging documents to be printed.

Word Processing — Level 2 — 30 hours

A continuation of professional word processing principles and practices are taught on CPT word processors. This is the second of a three-part word processing certificate program. Level two commences with a refresher of basic skills followed by instruction in complex editing, sorting, setting up and using glossaries and batch work. Most word processing applications used in business will have been explored should students choose to seek employment at this stage. Prerequisite: Word Processing — Level 1.

Word Processing — Level 3 — 30 hours

This is the third of a three-part word processing certificate program. A refresher of basic skills learned in the first two levels is followed by expanded instruction in the use of glossaries and the math pack, as well as fundamentals of decision procedures and software. Upon successful completion of Word Processing — Levels 1, 2, and 3, students will be able to perform almost any function on a Wang word processor and will be employable as word processing operators.

Word Processing — Wordstar — 30 hours

Students are trained to use the common word processing software Wordstar for word processing applications to many microcomputers. Instruction is completely hands-on, computer-assisted learning with support available from the instructor; a book parallels the computerized instruction. Students use an Olympia EX 100 computer in this course but the software will be similar regardless of the computer used by the student after graduation. Covers typical word processing functions, such as copying, moving and inserting type as well as business and writing functions.

Supervisory Training for Word Processing Operators — 30 hours

Designed for those already in or wishing to enter supervisory word processing positions; no actual word processing training is provided. Students will learn the difference between word and data processing and about four major types of word processing equipment: OIS, computer based, stand alone and shared logic. The course is strictly classroom instruction. Will enable students to choose proper systems for their particular application as well as select word processing personnel.

Basic Keyboarding — 24 hours

Teaches the operation of the basic keyboard including the alphabetic and numeric keyboard as well as the 10 key numeric pad. The goal is to provide the student with the skills necessary to use computer terminals, information processors and other keyboards, such as typewriter keyboards.

Office Management Procedures — 36 hours

Those with basic typing ability who wish to improve their employment opportunities or initiate clerical careers should study Office Procedures. Instruction covers a range of skills required to demonstrate competence to a potential employer as well as skills required to find employment. These include job search techniques, resume preparation, employment letters, application forms, interview techniques, attitude, grooming and human relations. Office skills include business communications, mail handling, telephone and telecommunications, copying and duplicating, dictation and transcription, records management, organizational methods, time management, meetings and travel. Students should be able to type before enrolling in this course. Successful completion of this course will equip students with the fundamental skills required by most offices today.

Secretarial Training — Basic — 30 hours

Students who have taken a basic typing course or have equivalent experience, will be introduced to the duties and responsibilities of the secretarial profession with emphasis on duties such as filing, mail handling, telephone techniques and general office procedures. An introduction to the dictaphone will be included, dependent upon the student's progress. Instruction in resume preparation and job search techniques is provided to encourage career growth. Upon successful completion, students will be able to apply for employment as a secretary.

Executive Secretarial Training — 36 hours

This advanced course is designed to enhance secretarial skills to an executive level to enable graduates to apply for senior secretarial positions. Students should have been previously employed as a secretary or have graduated from Secretarial Training — Basic. Shorthand is also an asset. Personal instruction is given in proper office etiquette, manners and grooming required by executive secretaries. Training is also provided in making travel arrangements, setting up itineraries, arranging meetings and other responsibilities.

Shorthand, Pitman — Basic — 60 hours

Will aid anyone who requires shorthand for clerical employment or who wishes to increase efficiency in other professions where accurate note-taking is essential. Instruction is provided in the 26 characters which represent the 24 sounds, the dots and dashes which represent the 12 vowel sounds and how to write them. Students learn the theory, transcription and speed development used in Pitman shorthand. Pitman is the most accurate form of shorthand and is required in most senior positions in business offices.

Shorthand, Pitman — Refresher — 48 hours

Reviews the basics of Pitman shorthand, with particular attention to basic outlines, short forms and speed enhancement. Suitable for students who want to refresh their shorthand skills or who have taken a basic course and want more practice. Prerequisite: Previous Pitman shorthand course or equivalent.

Electronic Switchboard Receptionist — 30 hours

Designed for persons with basic clerical skills who wish to upgrade their career opportunities as switchboard receptionist. Students should have a basic working knowledge of typing. Instruction will also include telex, filing, mailing, arranging couriers, dictaphone and related office procedures. The course offers a combination of theoretical instruction and hands-on training on modern electronic switchboards.

Typing — Basic — 30 hours

A course for beginners who wish to learn touch typing and its common applications. The foundation in keyboarding laid in this course will be instrumental in advanced clerical and secretarial training and practical computer training. Students use IBM electric typewriters and learn to set up various types of letters, forms, and memos. The fundamentals of spelling, punctuation, grammar and dictionary skills are covered. Upon completion of the course, students should have a typing speed of 35 to 40 wpm and qualify to enrol in the Typing — Advanced course.

Typing — Advanced — 30 hours

Persons with basic typing ability of 35 wpm will be able to build speed as well as increase typewriter applications. Students use IBM selectric typewriters learning business forms and machine transcription and may be introduced to electronic typewriters (if time permits). Special typing problems, proofreading and correcting are studied. Successful students will be able to type 55 — 60 wpm at the completion of the course and ready to enrol in word processing courses.

Business Accounting

* Accounting — Introductory Part 1 — 24 hours

Briefs students on the purpose and nature of accounting and financial statements, revenue and expenses, as well as completion of the accounting cycle. Accounting systems, accounting for purchase and sales of merchandise, internal control and cash transactions, plus receivables and payables are examined.

* Accounting — Introductory Part 2 — 24 hours

A continuation of Accounting — Introductory Part 2. Includes inventory and valuation systems, and the effect of pricing errors on financial statements; long-term assets and liabilities — plant and equipment, depreciation, bonds, debentures, etc; owner equity — sole proprietor, partnerships, corporations, corporate organization and share structure; corporate earnings and payroll accounting — earnings per share, cash and stock dividends, stock splits and retained earnings.

* Accounting — Intermediate — 36 hours

Provides the basis for a thorough understanding of accounting principles and procedures necessary for the successful operation of a business. Course content includes plants and equipment, natural resources and intangibles, partnerships, corporations, working capital and cash from statements, financial statement analysis and interpretation, departmental and responsibility accounting and manufacturing accounting. Prerequisite: Accounting — Introductory Part 1 and 2.

Payroll Procedures — 18 hours

Designed for those seeking employment in a payroll department, or as secretary to a small business who must perform the payroll function. Instruction is given in the use of various tables for deducting income tax, UIC, CPP, WCB deductions, as well as the completion of T4 forms and separation slips. Students also receive practical training in typical month-end and year-end reporting. Will enable students to perform basic payroll duties.

* Taxation — 36 hours

Small business owners and operators as well as those with a keen interest in personal and corporate taxation will derive an excellent overview of the income tax act. Successful graduates will be able to quickly and correctly prepare complex income tax returns and could consider entrepreneurial initiatives in this field. Emphasises computations of net income, capital costs allowance, capital gains and losses, computations of taxable income.

* Now part of Management Part-time Studies and may be absorbed into their program.

Business Administration

Assertiveness for Women: Solving Problems with Co-Workers — 6 hours

A one-day workshop for women who must report to supervisors, and of interest to female supervisors. The interactive instruction will help you resolve conflicts with co-workers and superiors in a tactful and direct manner, motivate others to change, communicate your personal and departmental needs to superiors and handle criticism from peers or superiors effectively.

Board Room Procedures — 18 hours

Anyone whose responsibilities include planning or participating in meetings will find the group instruction in this course ideal. Introduces students to the proper procedures and techniques for arranging a meeting, setting up an agenda, protocol, concluding a meeting, and setting up follow-up meetings. Rules of order will be covered in some depth. Includes role playing and group participation. Principles of parliamentary procedure and planning a conference will also be discussed.

Bookkeeping — Basic — 30 hours

This introductory course is oriented toward owners, managers or bookkeepers of small businesses. It is related to many of the Institute's Continuing Education business, office and clerical courses and provides a solid foundation for developing competence and employability in the business office environment. Includes accounting terminology, recording process, ledgers and trial balance, financial statements, accounts receivable, inventory and salaries. Provides a basic knowledge of bookkeeping and accounting. Enables students to identify basic internal control procedures.

Business Communications — 30 hours

This writing course will help persons in business who must deal with communications requirements. Successful graduates will have learned what makes a good business letter, technical report, office correspondence and oral communication. Designed primarily for secretaries, small business owners and managers, but would be a valuable asset to any career where communication is required.

Commercial Law — 36 hours

A must for anyone in business who needs to know what can and cannot be done in business and its legal ramifications. Introduces contract law, contract of sale, consumer protection, restrictive trade practices, corporation, and unincorporated organizations.

Conveyancing — 60 hours

An in depth course for legal support staff. Training will cover land title procedures, general typing procedures to be filed in land title office, property searches, methods of conveyancing titles, terminology, documentation, agreements for sale, mortgages, miscellaneous clauses and letters, builders liens and Lis Pendens. Course materials will be provided. Prerequisite: Legal stenographers course or equivalent experience, with instructors approval.

Data Processing — Parts 1 and 2 — 25 hours (2 X 12.5 hours)

Provides a good theoretical background to hardware and software and explains what data processing is. This two part course fulfills the requirements of the Accredited Public Accountants Computers 430 course. Part 1 introduces students to data processing, programming, hardware and software, program development, data representation and input, output, and communications. Part 2 covers computer operation, software systems, data-base management systems, alternate solutions and management and planning of computer systems. Predominantly theoretical, the course offers limited hands-on experience.

Economics — 36 hours

Anyone interested in economics will be stimulated by this introductory course as it helps develop an understanding of the organization and operation of the Canadian economy. It explores national income, money and banking trade, employment, inflation and growth, with an overview of economic theory and policy.

Fundamentals of Financial Management — 36 hours

Of value to those who currently own or manage a business. Covers the basics of financial management. Focus is on the use of financial statements, working capital, projecting cash flow, external financing, and re-investing your surplus; Budgeting under various conditions, distributing your surplus and planning for the future.

Purchasing — 36 hours

A combination of classroom instruction and mock assignments is used to teach students the principles and and practices of business purchasing including the organization of the purchasing department and its relationship to other departments, policies and procedures on negotiations with vendors, transportation, quality determination, quantity, source and prices.

Salesmanship and Promotion — 27 hours

Designed to give students with little or no experience formal training in the practice of selling and the principles of sales management. Emphasizes theory of selling an image and letting a product sell itself. Role playing will augment classroom lectures, encouraging students to develop competence in this technique. Instruction will include product knowledge, presentation, dealing with customers, closing an agreement, goals and time management and sales management.

Small Business Management — 30 hours

Ideal for those considering establishing a small business, of value to those already managing a small business. Will help students to decide whether or not to initiate a business. Licensing requirements, financial investment, whether to operate from the home, making better business decisions, business plans and controls, how to organize, manage and motivate people, and how to communicate effectively will be discussed.

Stockmarket Analysis — 24 hours

A general interest course which will increase beginners' knowledge of the stockmarket and how it operates. Students are taught what to look for when starting a stock portfolio and strategies for playing the stockmarket are discussed. The instructor-broker will examine common types of investment, market structures, buying and selling; mock investments will be analysed to complement

theoretical instruction. Portions of the course are held at a brokerage house so students may gather practical experience with stockmarket computers and view first-hand the modern techniques of buying and selling.

Public Relations — 30 hours

Anyone interested in commercial public relations practice as for small and medium-sized operations will gain from the theoretical instruction in this course. Will provide students with the necessary knowledge of public relations functions for businesses, associations and other organizations, so that they will be versed in these basics and competent in the organization of a public relations department for a small or medium-sized operation, and understand how to communicate with external organizations.

Effective Public Speaking — 27 hours

Designed to assist students with little experience in public speaking to overcome anxiety when speaking in group situations. Students will examine public speaking in a group and on a one-to-one basis. Students should be prepared to participate in speaking/listening exercises, giving reports, debates and impromptu speeches.

Introduction to Real Estate Appraisal — 30 hours

For those who want an introduction to the field of appraising real property. Particular attention is given to the use of fundamental appraisal principles and tools for the valuation of residential properties. The purpose, function and nature of value are examined, as are the basic principles and legal aspects of real estate. The course includes field trips to an array of real estate types, instruction in how to inspect property, a visit to a fee appraisal office and touches on renovations and additions. Successful completion of this course will not make students real estate appraisers.

Retail Merchandising — 36 hours

Ideal for those with some retailing experience who may be seeking advancement into merchandising management positions. An introduction to all aspects of retailing is provided so students may develop the competence required for such advancement. Upon completion, the student will be able to make sound buying decisions, develop sales forecasts and plan effective merchandise presentations. Emphasizes budgeting and profit planning techniques using operating records.

Computer Mathematics for Business — 48 hours

Will develop practical mathematical skills for business as used for bookkeeping, accounting and forecasting of trends. Hands-on computer training gives students employable skills in business mathematics and helps to reinforce abstract concepts. Prerequisite: Grade 12 mathematics.

Supervisory Training — 24 hours

Successful completion of this course will enable students to assume supervisory roles and operate their departments with efficiency and competence. Topics include: setting goals and objectives, motivating employees, delegating duties, resolving conflicts with employees and supervisors, providing clear and firm direction to staff, delegating authority while maintaining control, and supervisory responsibilities.

Food Training

Wine — An Introduction — 16 hours

For the newcomer to wine, wine theory is presented through a combination of brief lectures, films, reading assignments, group discussions and presentations by experts in the field followed by systematic sensory evaluation of wine typical to a particular region or grape variety. Upon completion of the course, students will be able to explain wine-making practices in several countries, identify label information according to legal definitions, describe the taste characteristics of red, white, and sparkling products, as well as discuss storage techniques and service procedures.

Hospitality Training

Bartending — 36 hours

Students are introduced to the necessary theory and practical skills required to operate in this important area of the hospitality industry. Instruction is provided in traditional mixing and serving techniques for numerous cocktails as well as wines and beers. Bar management, ordering, stock control and basic customer relations skills are also emphasized. Upon successful completion, students will be able to mix most common cocktails and know enough about beers and wine to seek employment in a restaurant, small lounge or neighbourhood pub.

Bar Management — 12.5 hours

Students who wish to establish or manage a small bar operation will gather the necessary expertise by successfully completing this short course. Reviews the history of alcoholic beverages. Theoretical instruction includes inventory and set-up, ordering and regulations, cash systems, sales reports, fraud systems, service, menu planning, marketing and public relations, and alcohol abuse. Includes a wine seminar. Ideal for someone currently employed in a bar whose responsibilities may include supervision. Will increase the job opportunities of students who have graduated from the Bartending course, thus providing a comprehensive package of bartending practice and management.

Cocktail Service — 8 hours

This career-oriented course will prepare anyone interested in the cocktail service portion of the hospitality industry for employment. Topics include public relations, history of various liquor forms, cocktail pricing, tray set-up and organization, bar terminology, wine service and other beverages, bar food service; common cash systems and floats, sales reports, opening and closing duties, regulations, and alcohol abuse. Employment opportunities may be found in restaurants, cocktail lounges, bars, pubs and other licensed premises.

Tour Guide — 30 hours

Provides the basic skills necessary to effectively organize and handle tour groups. Topics include tour group management, tour logistics, communication skills, handling emergencies, resource development, personal development. Students who successfuly complete this course will have a solid base for employment as tour guides. The course was developed at the request of the hospitality industry.

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.

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.

Industrial Building Service Worker

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. Training is strictly hands-on and provides an ideal introduction to the industry. Instruction is given in 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.

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. Training is basically 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.

Physical Plant Equipment Maintenance — 30 hours

Designed for persons interested in the performance, operating principles and application of mechanical systems and equipment required in recreational facilities. Instruction covers air conditioning systems, refrigeration, artificial ice installations, swimming pools, fire protection systems, boiler pumps, fans and electric motors. Graduates may seek employment servicing such equipment with hotels/motels, community centres, parks boards, apartments, arenas or other recreational facilities.

Swimming Pool Operations and Maintenance — 24 hours

Persons who desire a better understanding of the maintenance and operation of swimming pools and their equipment should enrol in this course. Through a combination of hands-on and theoretical instruction, students learn the proper care and maintenance of swimming pools. Suitable for professionals in the field or owners of private swimming pools.

Media Communication

Interior Design — Basic — 30 hours

For practising interior designers and draftsmen, as well as persons employed in related occupations such as signage, fashion, stage/theatre/TV and industrial designers. Will also assist potential interior designers to assess their creative abilities for a career, or provide the layman with an opportunity to study interior design from a graphic viewpoint. Provides the practical knowledge and skills to communicate professionalism in the merchandising of interior design ideas. Demonstrations and laboratory assignments will cover graphic presentation techniques: sample boards, renderings, sketches, floor plans, elevations, projections, lettering, media and use of materials. Experiments in both residential and commercial space will be graphically presented in course projects.

Photography — Basic — 24 hours

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. Studies 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.

Photography — Advanced — 24 hours

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.

Commercial Photography — Level 1 — 24 hours

Provides a sampling of the various commercial applications of photography with emphasis on fashion photography. Discussion of fashion photography theory and the fashion industry will augment instruction in various photographic exercises. Instruction analyses art versus commercial work while concentrating on portfolio shooting for model and photographer. Ethics, make-up applications and lighting set-ups are taught through a series of shooting sessions with models. Students must have a 35 mm camera. Instruction is given in photographer/client and photographer/model relationships, concept planning and dealing with model agencies. Students work with models on a one-to-one basis and create fashion photographs based on preplanned concepts. The challenge will be to illustrate a garment and create a mood to complement the concept.

Commercial Photography — Level 2 — 24 hours

For those who wish to pursue a career as a commercial photographer. Students will be shown model portfolios to discuss photography tests, cost and photographic needs. Instruction will be given on model wardrobe planning and make-up for shooting, lighting and color versus black and white prints. Students require a 35mm camera for location and studio shoots with models and products. All projects will be critiqued by a professional. Students will have their own presentation portfolio upon completion of the course.

Fashion Photography — 9 hours

This workshop will provide students with the basics of fashion photography. Instruction on make-up, lighting and fashion will be covered the first evening, followed by an all day photography session with professional models. Students must have a 35mm camera. The instructor will discuss the photography session with the student and will critique each students work.

Photographic Darkroom — Basic — 18 hours

This is an ideal course for persons interested in learning about the black-and-white photographic darkroom. Designed for amateur photographers who have completed the Photography — Basic course or have equivalent experience. Various processing techniques are explored so students become competent in processing film and developing prints. Students are instructed in the use of darkroom equipment including enlargers and lights. Instruction is limited to black and white photography. Upon successful completion of the course, students will be able to set up and operate their own darkrooms.

Darkroom for Advanced Printing — Workshop — 9 hours

Students wishing to improve the quality of their printing and expand their knowledge will find this workshop beneficial. The instructor will provide demonstrations on different types of paper, use of chemicals and advanced printing techniques. Students will use this information to work on their individual projects. Each project will be critiqued at the end of the workshop by the instructor.

Portraiture Workshop — Basic — 9 hours

This workshop is ideal for anyone wishing to learn how to take a good portrait. Student orientation on clothes, colors, and setting will begin the workshop, followed by instruction on lighting equipment, flash and daylight lighting. Students will do a photography session using their own 35mm cameras. All projects will be individually evaluated at the end of the workshop. Upon completion, each student should feel confident of their ability to make good portraits.

Advanced Portraiture Workshop — 9 hours

Provides students with the knowledge to take better portraits. Topics includes colors and clothes, lighting, make-up, different styles of portraits. Students will photograph different portrait subjects in the studio and outside (weather permitting) in an all day photo session. A 35mm camera is a must. A critique on performance will follow the photo session.

Wedding Photography Workshop — 9 hours

Students with a 35mm camera and a keen interest in wedding photography will find this course ideal. It will provide all the basics needed to take good wedding photographs including color and clothes, setting, lighting, various styles of portraits. Students will participate in an all day photo session with models in the studio

and outdoors, weather permitting. The instructor will review each student's photographs individually and discuss their style at the end of the course.

Product Photography Workshop — 9 hours

Will appeal to anyone with a 35mm camera and an interest in product photography. Classroom discussion will introduce students to the various approaches to this specialized area. Practical instruction will be given on different lighting techniques and arranging a photoset. Each student will do a complete shoot; set-up, lighting and photography, which will be critiqued at the end of the workshop.

Graphics — Level 1 — 30 hours

Persons with an interest but no previous experience in graphic arts are encouraged to enrol in this exploratory course to foster that interest and determine their career potential. Students are introduced to the field through a series of practical projects which focus on advertising and brochure publication. Instruction will aid students in learning the fundamental and mechanical techniques applied to preparing artwork for reproduction/presentation. Includes layouts of various publications, type specifications, typesetting and paste-up, basic printing and other reproduction techniques and requirements.

Graphics — Level 2 — 30 hours

A continuation from Graphics — Level 1 enables students to further develop the knowledge and skills associated with the graphic arts profession. The fundamentals of layout and paste-up are explored for brochures, annual reports, magazines, display advertising, packaging and logo design. Students will be taught how to make these camera-ready. An introduction to typesetting equipment, photographic techniques, film stripping and printing equipment is provided. Levels 1 and 2 students will be able to prepare a professional, comprehensive presentation to a prospective client. Prerequisite: Graphics — Level 1.

Silk Screening — Basic — 32 hours

For students who wish to explore silk screening as an art medium and printing technique. Students receive hands-on training in the design, construction and production of silk screen printing. Instruction is given in profilm application, posters, photo screen techniques, ink selection, single and multi-coloured stencils, paper, film and photo stencils. All necessary materials are supplied.

Employment Opportunities

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.

Dental Office Co-ordinator — 30 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.

Vocational Instructor Training — 21 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.

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, co-operation 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.

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