...Student Skills and Abilities

	WORK TERM 1	WORK TERM 2	GRAD
SIMPLE MICROPROCESSOR-BASED SYSTEMS			
Troubleshoot components of a microcomputer	●	●	●
Write 8-bit machine language programs	●	●	●
Write I/O drivers for 8-bit microprocessor systems	●	●	●
Install and program 8-bit support ICs	●	●	●
COMPUTING SKILLS			
Use DOS Operating System, application software packages	-	-	-
Install a personal computer system	-	-	-
Use wordprocessing (Wordperfect)		-	-
Use dBase		-	-
Use spreadsheets (Lotus 1-2-3)			-
Use Autocad			-
TECHNICAL DOCUMENTS			
Keep records, documentation	●	●	●
Write technical reports	●	●	●
BASIC RADIO			
Troubleshoot, repair, alignment and testing of AM and FM radio		●	●
Measure voltage standing wave ratio		●	●
ADVANCED MICROPROCESSORS			
Understand the operation of 16/32 bit microprocessors		●	●
Program in 8086 and 68000 machine language		●	●
Configure and repair 8086 and 68000 microprocessor based systems		●	●
ADVANCED PC BOARD REPAIR			
Analyze and perform non-destructive repair and modifications of through-hole and surface mount technologies		●	●
Use Pace soldering and desoldering stations		●	●
ADVANCED RADIO			
Program, troubleshoot, repair, test and maintain Mobile, and Base VHF radios		●	●
Troubleshoot, repair and test antennas and cabling		●	●
Install VHF and UHF connectors		●	●
Use an IFR test set		●	●
TELEPHONE SYSTEMS			
Understand the public telephone switching network		●	●
Perform cable termination procedures for wire-wrap, quick-connect and Bix terminal blocks		●	●
Test transmission lines and interpret the results		●	●
Use transmission line test sets		●	●
DIGITAL COMMUNICATIONS			
Analyze PAM and TDM techniques		●	●
Analyze PCM systems		●	●
Use first, second, and fourth order low pass filters		●	●
DATA COMMUNICATIONS			
Install, configure and test modems and line drivers/receivers			●
Install RS232 Connectors onto cables			●
TELEPHONE SWITCHING SYSTEMS			
Install, program, troubleshoot and repair PBX and Key systems			●
Interpret documentation for installation and troubleshooting procedures			●
Interpret the Electrical Code for communications cabling			●
Install 50 pin D connectors onto cables			●
VIDEO			
Troubleshoot, repair, set-up and test televisions and monitors			●
MICROWAVE AND SATELLITE SYSTEMS			
Identify microwave components			●
Install, program and test satellite receiving systems			●
FIBER OPTICS			
Know characteristics of emitters, detectors and fibers			●
Install connectors onto optical fibers			●
Test and calculate losses			●
Use optical power meter and light source instruments			●
Estimate system losses			●
FACSIMILES			
Install, program and maintain Fax machines			●
Troubleshoot and repair Fax machines			●

- Student has basic familiarity in this area.

Placement Process

Employers participating in the program supply a job description to the Co-op Centre. The position is posted, and qualified students submit their resumés to the Co-operative Education Coordinator, who forwards them to employers and arranges interviews. Students are chosen for work placement by the employer, who sets the terms of employment, salary and benefits.

For Further Information

For specific information about Co-op Ed programs contact the Co-operative Education Centre at:
Tel (604) 828-5276
or (604) 828-5494
Fax (604)828-5014

What Employers Say About Our Students...

"Worked diligently with minimal supervision. Was a pleasure to have on staff."
Allied Controls Ltd.,
Burnaby, B.C.

"Reliable, steady, good thinking skills"
System Directions Ltd.,
Burnaby, B.C.

"Quality of work and job knowledge are above average."
Weyerhaeuser Canada Ltd.,
Kamloops, B.C.

"...very capable in user support/ training function"
BC Lottery Corp.
Kamloops, B.C.

CO-OP EDUCATION AT U.C.C.

Student Information

ADMISSION REQUIREMENTS

a) Educational Requirements
- Successful completion of College pretest
- B.C. Grade 12 or equivalent
- B.C. Algebra 11 and Physics 11
- B.C. Algebra 12 or Physics 12 or Chemistry 11 or Electronics 12 are strongly recommended
- Adults may substitute appropriate related experience for regular admission requirements

b) General Requirements
- Interview with counselor
- Interview with program coordinator

c) Co-op Education Option
- minimum GPA of B- to participate in the Co-op option

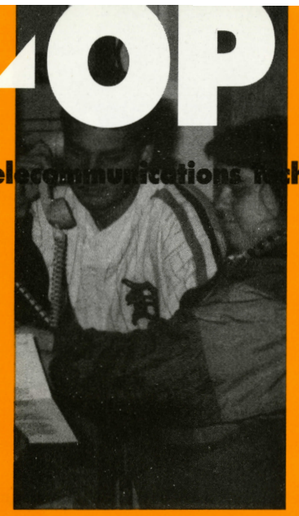
MOBILITY

Work term placements will be available throughout British Columbia, Alberta and other Canadian locations. Co-operative education offers the opportunity to combine travel with work experience.

CO-OPERATIVE EDUCATION CENTRE • TEL (604)828-5276 or (604) 828-5494

CO-OP ED

Electronics - Telecommunications Technician (TCOM)



The Program

The Telecommunications Technician Program at The University College of the Cariboo is a two year program that specializes in the installation, troubleshooting and repair of telecommunications systems and equipment.

The program also develops in students a working knowledge of PC's and operating systems as well as the use of common applications programs.

This technician program is the only one of its kind in BC to offer employers the opportunity to hire Co-op students. Before Work Term 1, students complete the 8-month provincial Core Electronics program in Academic Semesters 1 and 2. Academic Semesters are a combination of theory and supervised practical labs. Students spend 60% to 70% of their time working on current equipment under simulated industrial conditions.

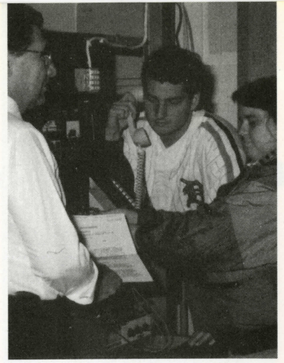
Practical aspects of troubleshooting and the use of advanced test equipment are developed during the lab periods. Throughout the program good work habits, safe shop practices, production, quality and efficiency are stressed. Students also produce numerous technical reports.

What is Co-operative Education?

Co-op Education is the integration of theory and practical experience. Students alternate between specific periods of paid employment (Work Terms) and periods of on-campus study (Academic Semesters).

THE UNIVERSITY COLLEGE OF THE CARIBOO

Telecommunications Technician (TCOM)



Employer Benefits

TIME SAVER

We pre-screen Co-op students to meet your needs.

SKILLED EMPLOYEES

Co-op students are skilled and ready to contribute to the day-to-day operation of your organization.

TEMPORARY SUPPORT

Co-op students provide temporary help during peak periods and can assist permanent personnel to concentrate on other tasks.

TEAM BUILDING

Co-op students are motivated, capable individuals with new ideas that can have a positive effect on permanent staff.

COST EFFECTIVE

Co-op affords you a low-risk opportunity to recruit permanent employees. You can select from a group of Co-op students who have demonstrated competence and interest in your organization.

UP-TO-DATE PROGRAMS

Co-op gives you an opportunity to provide feedback to UCC and help keep programs and courses relevant to your needs.

Co-op Time Pattern

	Year 1	Year 2
JAN-APRIL	ACADEMIC SEMESTER 1	ACADEMIC SEMESTER 3
MAY- AUG	ACADEMIC SEMESTER 2	CO-OP WORK TERM 2
SEPT-DEC	CO-OP WORK TERM 1	ACADEMIC SEMESTER 4*

* Graduation: December

Program Outline

ACADEMIC SEMESTER 1

January to April (4 months)

ELEC 152
BASIC ELECTRONICS THEORY introduces component identification, soldering, Ohm's Law, Kirchhoff's Laws, series and parallel circuits, batteries, function generators, oscilloscopes, magnetism, capacitance, capacitive reactance, inductance, inductive reactance, AC circuits, resonance, filters, and basic semiconductors.

ELEC 153
BASIC ELECTRONICS LAB verifies the theory of Electronics 152 and includes the correct use of hand tools and electronic test equipment. Special emphasis is placed on logical troubleshooting.

ACADEMIC SEMESTER 2

May to August (4 months)

ELEC 162
INTERMEDIATE ELECTRONICS THEORY is a study of basic semiconductors, semiconductor power supplies, transistor amplifiers, transistor oscillators, thyristors, optoelectronic devices and linear, digital and basic microprocessor circuits.

ELEC 163
INTERMEDIATE ELECTRONICS LAB verifies the theory of Electronics 162 and includes experiments using digital and microprocessor trainers. Test equipment and logical troubleshooting are emphasized.

CO-OP WORK TERM 1

September to December (4 months)

As technicians-in-training, students can be assigned to assemble printed circuit boards, locate faults using basic troubleshooting skills, test and replace components, and assist with equipment installation.

ACADEMIC SEMESTER 3

January to April (4 months)

TCOM 152
TELECOMMUNICATIONS THEORY 1 includes advanced microprocessors (16 and 32 bit), digital communications, mobile and cellular radio, surface mount technology, and telephone systems. Emphasis is placed on installation, programming, troubleshooting and repair procedures.

TCOM 153
TELECOMMUNICATIONS LAB 1 involves use of advanced test equipment and tools to develop skills in testing and alignment procedures; installation and programming procedures; and troubleshooting and repair procedures.

UCC faculty have Diplomas in Electronics and Telecommunication T.Q., plus extensive industrial experience.

CO-OP WORK TERM 2

May to August (4 months)

Students are capable of aligning, testing, basic troubleshooting and repairing radio equipment. With their knowledge of telephone sets and cabling techniques, students can assist telephone systems technicians. They can also utilize their knowledge of common application software.

ACADEMIC SEMESTER 4

September to December (4 months)

TCOM 162
TELECOMMUNICATIONS THEORY 2 Studies include telephone switching systems, basic video, data communications, microwave and satellite communications, fiber optics and facsimile. Using real life operational systems, students learn the theory of operation, installation procedures, testing and troubleshooting procedures.

TCOM 163
TELECOMMUNICATIONS LAB 2 involves extensive use of advanced test equipment and tools. Students develop practical skills in the installation, testing, troubleshooting and repair of working telecommunications systems.

GRADUATION: DECEMBER

As junior technicians, graduates are employed in the telecommunications industry with mobile and cellular radio, interconnect, satellite communication and telephone companies, railways, and government agencies.

Student Skills and Abilities

	WORK TERM 1	WORK TERM 2	GRAD
GENERAL SHOP PRACTICES AND SAFETY			
Use hand and power tools	●	●	●
Solder and desolder	●	●	●
Select and use hardware	●	●	●
Use chemicals and lubricants	●	●	●
Terminate test and install cables	●	●	●
Layout and assemble wire wrap and circuit boards	●	●	●
TEST EQUIPMENT			
Use & maintain analog meters & digital multimeters	●	●	●
Use oscilloscopes to measure AC and DC circuits	●	●	●
Use & maintain function generators, component testers, frequency counters, and logic probes	●	●	●
Use power supplies	●	●	●
PASSIVE ELECTRONIC COMPONENTS			
Select, use and troubleshoot resistive devices, relays, electromagnetic transducers, transformers and inductors, capacitors and batteries	●	●	●
ACTIVE ELECTRONIC COMPONENTS			
Select, use and troubleshoot semiconductor diodes, bipolar transistors, field effect transistors, thyristors and optoelectrical devices	●	●	●
PASSIVE AC CIRCUITS			
Troubleshoot capacitive, inductive, and RLC circuits	●	●	●
Construct and measure time-constant, resonant and filter circuits	●	●	●
ACTIVE DISCRETE COMPONENT CIRCUITS			
Troubleshoot power supply and transistor amplifier circuits	●	●	●
LINEAR IC CIRCUITS			
Troubleshoot operational amplifiers, integrated circuit timers, integrated circuit regulators, voltage controlled oscillators, tone decoders/encoders, phase locked loops, comparators, audio amplifiers, integrators, differentiators	●	●	●
DIGITAL IC CIRCUITS			
Interpret numbering systems	●	●	●
Measure fundamental digital gates	●	●	●
Identify device "family" characteristics	●	●	●
Troubleshoot advanced digital circuits, flip-flop, display, arithmetic, converter, data conversion and transmission circuits, DAC and ADC circuits	●	●	●

continued...