



The Engineering Technology programs and courses are offered in response to the increasing need for qualified personnel with a solid background and relevance to support current Engineering technologies. Participants will have the opportunity to learn a variety of skills in AutoCAD, CNC and CAD/CAM, Electrical Power Systems, Fluid Power, Industrial PLC/Robotics Control and more.

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AUTOCAD CERTIFICATE – 7319

This program will prepare you for a career in engineering graphics. In the modern engineering office, all work is done on computers, and all drafting is done with computer-aided drafting (CAD) methods. AutoCAD is the most popular of these. You will be trained on the latest hardware in conjunction with AutoCAD 2009. This program is heavily lab-oriented, with hands-on opportunities using your personal terminal.

COMPLETION REQUIREMENTS

AutoCAD Module 1	CECA-931	p. 56
AutoCAD Module 2	CECA-932	p. 56
AutoCAD Module 3	CECA-933	p. 56
AutoCAD Module 4	CECA-934	p. 56
AutoLISP	CECA-935	p. 57

CNC AND CAD/CAM CERTIFICATE – 7413

This program is designed for those who wish to pursue a career as a CNC Machinist, CNC Programmer or CAD/CAM Programmer. Applicants who have prior experience in metal machining should consult with the program supervisor to ensure proper course selection.

COMPLETION REQUIREMENTS

MasterCAM CAD	CECA-900	p. 58
CNC Manual Programming Mill 1 & 2	CECA-901/902	p. 57
CNC Manual Programming Lathe 1 & 2	CECA-910/911	p. 58

And one of the two groups of courses shown below:

<i>Group 1 (Earns a Certificate of Achievement in CAD/CAM Milling)</i>		
CAD/CAM Vertical Mill 1	CECA-903	p. 57
CAD/CAM Vertical Mill 2	CECA-904	p. 57
<i>Group 2 (Earns a Certificate of Achievement in CAD/CAM Lathe)</i>		
CAD/CAM Lathe 1	CECA-905	p. 57
CAD/CAM Lathe 2	CECA-906	p. 57

ELECTRICAL POWER SYSTEMS CERTIFICATE – 7383

This program prepares you to service residential and industrial electrical systems. You will study a wide-range of subjects within the power systems discipline.

COMPLETION REQUIREMENTS

Electrical Fundamentals	CERB-601	p. 58
Electrical Construction and Maintenance 1	CERB-602	p. 58
Electrical Construction and Maintenance 2	CERB-603	p. 58
Electrical Safety Codes and Regulations	CERB-604	p. 58
Electrical Systems and Control	CERB-605	p. 58

FLUID POWER TECHNICIAN CERTIFICATE – 7412

This program is designed for those who wish to obtain a basic understanding of fluid power systems.

COMPLETION REQUIREMENTS

Pneumatics 1	CERB-501	p. 59
Pneumatics 2	CERB-502	p. 59
Pneumatics 3	CERB-503	p. 59
Hydraulics 1	CERB-504	p. 59
Hydraulics 2	CERB-505	p. 59
Hydraulics 3	CERB-506	p. 59

INDUSTRIAL PLC/ROBOTICS CONTROL SPECIALIST CERTIFICATE – 7347

This program is designed for those who wish to obtain knowledge in Automation, Robotics and Programmable Logic Controllers (PLC) systems.

COMPLETION REQUIREMENTS

Industrial PLC 1 – Allen Bradley	CERB-101	p. 59
Industrial PLC 2 – Allen Bradley	CERB-102	p. 59
Industrial PLC 3 – Omron/Siemens	CERB-103	p. 59
Robotic Systems	CERB-104	p. 59
Industrial PLC Applications	CERB-105	p. 59

AutoCAD

AUTOCAD MODULE 1

CECA-931

Learn to use the most popular computer-aided design (CAD) software in the world. Gain valuable knowledge and hands-on experience in AutoCAD's command structure, including drawing, editing, dimensioning, hatching and plotting.

HOURS: 21

FEE: IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 13 – Nov 1	M	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
	803	Nov 1 – Dec 13	M	7-10 pm	PRO
	804	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 10 – Feb 28 (no class on Feb 21)	M	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
	823	Mar 14 – Apr 25	M	7-10 pm	PRO
Spring	824	Mar 12 – Apr 30	Sa	9:30 am-12:30 pm	PRO
	841	May 7 – June 18	Sa	9:30 am-12:30 pm	PRO
	842	July 4 – Aug 22	M	7-10 pm	PRO

AUTOCAD MODULE 2

CECA-932

Expanding on the skills acquired in Module 1, you will learn additional commands and techniques to develop drawings with greater complexity. Study commands such as layers, blocks, attributes, and external references, as well as enhanced plotting techniques.

Prerequisite: AutoCAD Module 1 CECA-931

HOURS: 21

FEE: IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 7 – Oct 19	Tu	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
	803	Oct 26 – Dec 7	Tu	7-10 pm	PRO
	804	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 11 – Feb 22	Tu	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
	823	Mar 1 – Apr 12	Tu	7-10 pm	PRO
Spring	824	Mar 12 – Apr 30	Sa	9:30 am-12:30 pm	PRO
	841	May 7 – June 18	Sa	12:30-3:30 pm	PRO
	842	July 5 – Aug 16	Tu	7-10 pm	PRO

AUTOCAD MODULE 3

CECA-933

This module will cover more advanced techniques to enhance AutoCAD productivity. As a continuation of Module 2, you will be given an in-depth understanding of 3D wire-frame drawing, in addition to customizing AutoCAD through the use of script files.

Prerequisite: AutoCAD Module 2 CECA-932

HOURS: 21

FEE: IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 13 – Nov 1	M	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
	803	Nov 1 – Dec 13	M	7-10 pm	PRO
	804	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 11 – Feb 22	Tu	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
	823	Mar 8 – Apr 19	Tu	7-10 pm	PRO
Spring	824	Mar 12 – Apr 30	Sa	9:30 am-12:30 pm	PRO
	841	May 11 – June 22	W	7-10 pm	PRO
	842	July 7 – Aug 18	Th	7-10 pm	PRO

AUTOCAD MODULE 4

CECA-934

This final module will offer an in-depth look at true 3D solid modeling using AutoCAD's solid modeller. Learn new 3D commands and procedures to produce various complex parts ready for rendering and CAM software.

Prerequisite: AutoCAD Module 3 CECA-933

HOURS: 21

FEE: IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 8 – Oct 20	W	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
	803	Oct 27 – Dec 8	W	7-10 pm	PRO
	804	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 12 – Feb 23	W	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
	823	Mar 16 – Apr 27	W	7-10 pm	PRO
Spring	841	May 9 – June 27 (no class on May 23)	M	7-10 pm	PRO
	842	July 9 – Aug 20	Sa	9:30 am-12:30 pm	PRO

AUTOLISP

AutoLISP is a computer programming language designed specifically for AutoCAD software. Once you are proficient in AutoLISP, you are able to increase your performance and efficiency by manipulating system variables, creating new commands and designing discipline-specific menus.

Prerequisite: AutoCAD Module 2 CECA-932

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 9 – Oct 21	Th	7-10 pm	PRO
	802	Oct 28 – Dec 9	Th	7-10 pm	PRO
Winter	821	Jan 12 – Feb 23	W	7-10 pm	PRO
	822	Mar 9 – Apr 20	W	7-10 pm	PRO
Spring	841	May 10 – June 21	Tu	7-10 pm	PRO
	842	July 9 – Aug 20	Sa	12:30-3:30 pm	PRO

Basic Air Conditioning & Refrigeration

BASIC AIR CONDITIONING & REFRIGERATION MODULE 1

CEAR-100

This course is designed to prepare the student to play an active role in servicing and installing residential and domestic air conditioning and refrigeration systems. All individuals who handle refrigerants will have to be certified by attending an approved one-day environmental awareness training course (Air Conditioning & Refrigeration ODP Code of Practice CECR-801) with the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAIC).

Prerequisite: Grade 10

HOURS: 24 **FEE:** IC: \$460

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 8 – Oct 20	W	7-10 pm	PRO
Winter	821	Jan 11 – Mar 1	Tu	7-10 pm	PRO
Spring	841	May 3 – June 21	Tu	7-10 pm	PRO

BASIC AIR CONDITIONING & REFRIGERATION MODULE 2

CEAR-200

This course is a continuation of Module 1. In this advanced course, students will study practical service and installation of residential split systems, domestic and small commercial refrigeration systems.

Prerequisite: Basic Air Conditioning & Refrigeration Module 1 CEAR-100

HOURS: 24 **FEE:** IC: \$460

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 27 – Dec 15	W	7-10 pm	PRO
Winter	821	Mar 15 – May 3	Tu	7-10 pm	PRO
Spring	841	July 5 – Aug 23	Tu	7-10 pm	PRO

Note: Students will receive a Recognition of Achievement on successful completion of both Modules 1 & 2.

CNC and CAD/CAM

CAD/CAM LATHE 1

CECA-905

Using the MasterCAM (V8.1.1) software, create part geometry for various parts of medium complexity. Establish toolpaths and cutting parameters to generate a CNC program for a 3-axis CNC Turning Centre (Mori-Seiki SL-15-Fanuc 16 Control).

Prerequisites: MasterCAM CAD CECA-900, CNC Manual Programming Lathe 2 CECA-911

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 8 – Oct 20	W	7-10 pm	PRO
Spring	841	May 11 – June 22	W	7-10 pm	PRO

Register online!

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CAD/CAM LATHE 2

CECA-906

Expand the basic knowledge accrued in CAD/CAM 1. Generate geometry for complex parts using external and internal thread module. Define the common parameters and tool definitions. Use in Groove module, multi-repetitive cycle to generate the CNC data to machine the part.

Prerequisite: CAD/CAM Lathe 1 CECA-905

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Nov 3 – Dec 15	W	7-10 pm	PRO
Spring	841	July 6 – Aug 17	W	7-10 pm	PRO

CAD/CAM VERTICAL MILL 1

CECA-903

Today, all industries are served by the powerful tool known as CAD/CAM. When a computer is given the input of a geometrical shape, a CNC program can be generated for extremely complex parts with little programming input. Upon course completion, you will be able to use the Mastercam Software (V 9.2) system to produce a formatted CNC listing for a centre-line program.

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 7 – Oct 19	Tu	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 11 – Feb 22	Tu	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
Spring	841	May 10 – June 21	Tu	7-10 pm	PRO

CAD/CAM VERTICAL MILL 2

CECA-904

You'll advance from centre-line to offset contour programming, pocketing and zig-zag roughing routines. Using the Mastercam (V8.1.1) system, you'll learn to produce a formatted CNC tape file for all types of three-axis programs.

Prerequisite: CAD/CAM Vertical Mill 1 CECA-903

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 26 – Dec 7	Tu	7-10 pm	PRO
	802	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Spring	841	July 5 – Aug 16	Tu	7-10 pm	PRO

CNC MACHINE TOOL SETUP

CECA-912

This course is designed to provide hands-on applied training to students in the operations and setup procedures for specific CNC machine tools (CNC vertical Machine Centre). The course will also give students the practical experience in the required procedures associated with successful CNC machine tool setup.

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 2 – Nov 30	Sa	9:30 am-12:30 pm	PRO
Winter	821	Feb 5 – Mar 19	Sa	9:30 am-12:30 pm	PRO
Spring	841	May 7 – June 18	Sa	9:30 am-12:30 pm	PRO

CNC MANUAL PROGRAMMING LATHE 1

CECA-910

This introductory course in programming and operation of a Computer Numerical Control (CNC) three-axis turning centre is designed for those already familiar with manual machining operations. It will prepare you to write an operational instruction set for a Turning Centre (Mori-Seiki SL-150- Fanuc 16 Control) with a CNC program.

Prerequisites: Mechanical Blueprint Reading or permission of dept.

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 9 – Oct 21	Th	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
	803	Oct 28 – Dec 9	Th	7-10 pm	PRO
	804	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 13 – Feb 24	Th	7-10 pm	PRO
Spring	841	May 7 – June 18	Sa	9:30 am-12:30 pm	PRO

CNC MANUAL PROGRAMMING LATHE 2

CECA-911

In this course, you'll build upon skills already obtained, and learn how to prepare programs of greater complexity. Topics include multi-repetitive cycles, thread cutting sub-programs and C axis programming using the Mori-Seiki CNC SL-150.

Prerequisite: CNC Manual Programming Lathe 1 CECA-910

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 25 – Dec 6	M	7-10 pm	PRO
	802	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 10 – Feb 28	M	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
	823	Feb 28 – Apr 11	M	7-10 pm	PRO

MASTER CAM/CAD

CECA-900

Explore the CAD module of the MasterCAM software. Obtain a solid foundation in the generation and manipulation of geometric shapes in this introductory CAD course that serves as a prerequisite to all CAD/CAM courses. The hands-on lab will address all of the appropriate software menus in a 2D-environment.

Prerequisite: Mechanical Blueprint Reading or permission of the dept.

HOURS: 21 **FEE:** IC: \$370

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 13 – Nov 1	M	7-10 pm	PRO
	802	Sept 11 – Oct 30	Sa	12:30 pm-3:30 pm	PRO
	803	Nov 6 – Dec 18	Sa	12:30 pm-3:30 pm	PRO
Winter	821	Jan 15 – Feb 26	Sa	12:30 pm-3:30 pm	PRO
	841	May 14 – June 25	Sa	12:30 pm-3:30 pm	PRO

COMPUTER NUMERICAL CONTROL MANUAL PROGRAMMING MILL 1

CECA-901

Today, industrial opportunities for machinists with CNC programming skills are universal. If you are familiar with the process of manual machining, then this course will enable you to upgrade your skills, by teaching you how to write a set of operational instructions for a Machining Centre (Bridgeport MVC 100/22 – Fanuc 18i Control), with a CNC program.

Prerequisites: Mechanical Blueprint Reading or permission of dept.

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 7 – Oct 19	Tu	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-12:30 pm	PRO
	803	Oct 26 – Dec 7	Tu	7-10 pm	PRO
	804	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
Spring	841	May 14 – June 25	Sa	9:30 am-12:30 pm	PRO

COMPUTER NUMERICAL CONTROL MANUAL PROGRAMMING MILL 2

CECA-902

Advancing from simple to more complex part drawings, you'll learn to prepare all types of part programs for a three-axis Machining Centre (Bridgeport MVC 100/22 – Fanuc 18i Control), including many types of canned cycles, cutter radius compensation and sub-programming.

Prerequisite: Computer Numerical Control Manual Programming Mill 1 CECA-901

HOURS: 21 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 25 – Dec 6	M	7-10 pm	PRO
	802	Nov 6 – Dec 18	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 10 – Feb 28	M	7-10 pm	PRO
	822	Jan 15 – Feb 26	Sa	9:30 am-12:30 pm	PRO
	823	Feb 28 – Apr 11	M	7-10 pm	PRO

Electrical Power Systems

ELECTRICAL FUNDAMENTALS

CERB-601

Learn the basic concepts of electricity and electrical circuits and how to use measuring instruments such as multimeters and oscilloscopes. The lectures are reinforced with hands-on lab experiments.

HOURS: 42 **FEE:** IC: \$435

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 13 – Dec 20	M	7-10 pm	PRO
	802	Sept 11 – Oct 23	Sa	9:30 am-3:30 pm	PRO
Winter	821	Jan 10 – Apr 18	M	7-10 pm	PRO
	822	Jan 15 – Apr 16	Sa	9:30 am-12:30 pm	PRO
Spring	841	May 10 – Aug 9	Tu	7-10 pm	PRO
	842	May 7 – June 18	Sa	9:30 am-3:30 pm	PRO

ELECTRICAL CONSTRUCTION AND MAINTENANCE 1

CERB-602

Familiarize yourself with the use of measuring instruments, techniques for troubleshooting electrical equipment and understanding schematic wiring diagrams.

Topics include series, parallel and combination circuits, two-wire distribution line lags, power efficiency, wire calculation, magnet, electromagnetism and induction, three-wire distribution and hydro-electrical power commission regulations.

Prerequisite: Electrical Fundamentals CERB-601 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 7 – Dec 7	Tu	7-10 pm	PRO
Winter	821	Jan 11 – Apr 12	Tu	7-10 pm	PRO
Spring	841	May 12 – Aug 11	Th	7-10 pm	PRO

ELECTRICAL CONSTRUCTION AND MAINTENANCE 2

CERB-603

Learn how to use measuring instruments, techniques for troubleshooting electrical equipment, and how to interpret schematic wiring diagrams. Topics include electromagnetism and induction, DC generation, set-up and operations, DC motors, motor control and operation, and Canadian electrical code regulations.

Prerequisite: Electrical Construction and Maintenance 1 CERB-602 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 8 – Dec 8	W	7-10 pm	PRO
Winter	821	Jan 12 – Apr 13	W	7-10 pm	PRO
Spring	841	May 14 – Aug 20	Sa	9:30 am-12:30 pm	PRO

ELECTRICAL SAFETY CODE AND REGULATIONS

CERB-604

This course is essential for a career in industrial and residential electrical systems. You will learn both the Ontario Hydroelectric Safety Code and Regulations and the Canadian Electrical Safety Code and Regulations. You will examine and reference blueprints for residential and industrial installations to both codes.

Prerequisite: Electrical Construction and Maintenance 2 CERB-603 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 8 – Dec 8	W	7-10 pm	PRO
Winter	821	Jan 13 – Apr 14	Th	7-10 pm	PRO
Spring	841	May 8 – Aug 22	M	7-10 pm	PRO

ELECTRICAL SYSTEMS AND CONTROL

CERB-605

Examine systems behaviour, forms, types and modes of control. Topics include Programmable Logic Controllers (PLCs) as an alternative to electro-mechanical devices, signal conditioners, transducers, servo amplifiers, thyristor controlled rectifiers, and DC and AC solid state speed control.

Prerequisite: Electrical Construction and Maintenance 2 CERB-603 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 9 – Dec 9	Th	7-10 pm	PRO
Winter	821	Jan 13 – Apr 14	Th	7-10 pm	PRO
Spring	841	May 11 – Aug 10	W	7-10 pm	PRO

Environment Site Assessment

ENVIRONMENTAL SITE ASSESSEMENT PHASE 1 (PART 1) CEEA-110

This 21-hour course, based on CSA Z768-01 Standard, will be presented by certified site assessors. Participants will be exposed to every aspect of a Phase I ESA. Actual sites are used to illustrate environmental issues and to assist in the determination of associated environmental risks. Successful completion of the course will assist participants in achieving the academic requirements for certification as a Certified Environmental Assessor of Sites (CEAS).

HOURS: 21 **FEE:** IC: \$415

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 15,16,17	F/Sa/Su	9:30 am-4:30 pm	MOR
Spring	841	June 3, 4, 5	F/Sa/Su	9:30 am-4:30 pm	MOR

ENVIRONMENTAL SITE ASSESSEMENT PHASE 1 (PART 2) CEEA-200

This practical course will build on the material presented in CEEA-110. This course is designed to be hands-on and will involve the completion of an actual Phase I ESA.

Prerequisite: Completion of CEEA-110

HOURS: 7 **FEE:** IC: \$220

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Oct 18	M	9:30 am-4:30 pm	MOR
Spring	841	June 6	M	9:30 am-4:30 pm	MOR

Fluid Power

PNEUMATICS 1

CERB-501

This course will look at the operation and interaction of all components of an industrial compressed air system. Topics include: Pascal's law, Gas laws, compressors, receivers, air dryers, filters, regulators and lubricators, and an introduction to valves and cylinders.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 8 – Dec 8	W	7-10 pm	PRO
Winter	821	Jan 12 – Apr 13	W	7-10 pm	PRO
Spring	841	May 9 – June 27	M/W	7-10 pm	PRO

PNEUMATICS 2

CERB-502

This course is the extension of Pneumatics 1 CERB-501. This course covers the operation and design of industrial pneumatic control circuitry. Topics include valves and actuators (such as cylinders, air motors, air/oil systems, etc), pilot circuitry, cascaded systems, and air logic systems.

Prerequisite: Pneumatics 1 CERB-501 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 7 – Dec 7	Tu	7-10 pm	PRO
Winter	821	Jan 11 – Apr 12	Tu	7-10 pm	PRO

PNEUMATICS 3

CERB-503

This course is the extension of Pneumatics 2 CERB-502. This course covers the operation and design of industrial electrical/pneumatic control circuitry. Topics include electrical/pneumatic relay circuits, ladder logic circuits, manual controls, automatic controls, emergency and safety controls.

Prerequisite: Pneumatics 2 CERB-502 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Winter	821	Jan 10 – Apr 18	M	7-10 pm	PRO

HYDRAULICS 1

CERB-504

This course is an introduction to the basics of hydraulic systems. Topics include: terms and definitions, Pascal's law and related calculations, basic hydraulic system and components, symbols and schematics, safety, flow and pressure losses.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 13 – Dec 20	M	7-10 pm	PRO
Winter	821	Jan 18 – Apr 19	Tu	7-10 pm	PRO
Spring	841	May 10 – June 23	Tu/Th	7-10 pm	PRO

HYDRAULICS 2

CERB-505

This course is the extension of Hydraulics 1 CERB-504. This course is basic hydraulic circuit and systems. Topics include: pump types, directional control and pressure valves, flow meters, hydraulic system diagnosis, and fluid conductors.

Prerequisite: Hydraulics 1 CERB-504 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 7 – Dec 7	Tu	7-10 pm	PRO
Winter	821	Jan 11 – Apr 12	Tu	7-10 pm	PRO

HYDRAULICS 3

CERB-506

This course is the extension of Hydraulics 2 CERB-505. Look deeper into the operation and components of hydraulic systems. Topics include motor types, Hi-Lo systems, variable pumps, open and closed loop transmission, contamination and filters, and cartridge valves.

Prerequisite: Hydraulics 2 CERB-505 or permission of the dept.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 9 – Dec 9	Th	7-10 pm	PRO
Winter	821	Jan 13 – Apr 14	Th	7-10 pm	PRO

Industrial PLC/Robotics

INDUSTRIAL PLC 1 – ALLEN BRADLEY

CERB-101

This course introduces you to the Allen Bradley SLC-503 Programmable Logic Controllers (PLC) basic instruction set. Topics include on/off-line PLC programming techniques, relays, timers, and counters. You will be using the AB PLC Logix window software.

HOURS: 36 **FEE:** IC: \$390

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 7 – Nov 23	Tu	7-10 pm	PRO
Winter	821	Jan 11 – Mar 29	Tu	7-10 pm	PRO
Spring	841	May 9 – June 20	M/W	7-10 pm	PRO

INDUSTRIAL PLC 2 – ALLEN BRADLEY

CERB-102

You will learn the additive sequence programming techniques, AB Panel view 550 operator station and be introduced to AB PLC process applications.

Prerequisite: Industrial PLC 1 – Allen Bradley CERB-101

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 8 – Dec 8	W	7-10 pm	PRO
Winter	821	Jan 12 – Apr 13	W	7-10 pm	PRO

INDUSTRIAL PLC 3 – OMRON/SIEMENS

CERB-103

You will be introduced to the Omron and Siemens PLC basic instruction set. Topics include on/off-line PLC programming techniques, relays, timers, and counters. You will be using the Omron and Siemens window software. In addition, basic motor controls will be introduced.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 9 – Dec 9	Th	7-10 pm	PRO
Winter	821	Jan 13 – Apr 14	Th	7-10 pm	PRO
Spring	841	May 10 – Aug 9	Tu	7-10 pm	PRO

ROBOTICS SYSTEMS

CERB-104

This course introduces you to ABB robots. Topics include pick and place programs, robot configurations, drive types, end effectors, sensors, safety and maintenance.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 11 – Dec 11	Sa	9:30 am-12:30 pm	PRO
Winter	821	Jan 15 – Apr 16	Sa	9:30 am-12:30 pm	PRO

INDUSTRIAL PLC APPLICATIONS

CERB-105

You will be introduced to the Omron and Siemens PLC basic instruction set. Topics include on/off-line PLC programming techniques, relays, timers, and counters. You will be using the Omron and Siemens window software. In addition, basic motor controls will be introduced.

HOURS: 42 **FEE:** IC: \$435

SEC. #	DATE	DAY	TIME	LOC	DEL
Fall	801	Sept 13 – Dec 20 (no class on Oct 10)	M	7-10 pm	PRO
Winter	821	Jan 10 – Apr 18 (no class Feb 21)	M	7-10 pm	PRO

AUTOCAD FOR ARCHITECTURE

CECA-949

Architects, technologists, and contractors prepare drawings using computer-aided drafting (CAD) software. AutoCAD is the most popular of these. Learn the fundamentals of using AutoCAD by drawing a variety of building examples. Gain hands-on experience using AutoCAD commands and drafting techniques for drawing, modifying, and dimensioning.

HOURS: 42 **FEE:** IC: \$370

TERM	SEC. #	DATE	DAY	TIME	LOC
Fall	801	Sept 7 – Dec 7	Tu	7-10 pm	PRO
Winter	821	Jan 11 – Apr 12	Tu	7-10 pm	PRO
Spring	841	May 10 – June 23	Tu/Th	7-10 pm	PRO

What's new?

Visit centennialcollege.ca/parttime throughout the year for news and course updates.

