Computer Automated Systems Technician - Diploma

PLAR Candidate Guide
Prior Learning Assessment and Recognition (PLAR)

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Prior learning credit options at Saskatchewan Polytechnic

See Get Credit for What you Know for important information about all options to get credit for prior learning at Sask Polytech, including PLAR, transfer credit, Canadian Armed Forces credit, and equivalency credit.

How to navigate this document

This document contains links to other document sections or webpages. To return to where you were from another section in this document, press the *ALT* key and *left arrow* key at the same time. To return to this webpage from another webpage, close the other webpage or click back on the browser tab for this document.

Contents of this guide

This guide contains the following specific PLAR information and tools for this program

A. PLAR fees

Fees for PLAR challenges are set to cover our costs for consultation, assessment, and related administrative tasks. PLAR fees are non-refundable and non-transferrable.

The PLAR fees policy is subject to change for each new academic year. Please see the **Cost** section on the PLAR webpage for current fee information.

B. PLAR eligibility and options

To be eligible for PLAR you must consult with the PLAR contact person and be approved for PLAR assessment.

Course prerequisites and corequisites

Some courses have one or more other courses that must be completed first (pre-requisite) or at the same time (co-requisite). See course outlines in this guide to identify any pre- or co-requisites for each course. Discuss with your PLAR contact person how to deal with courses with co-requisites.

Block assessment

Some programs may assess a cluster of courses together in one block, which may save you time and effort. Ask the PLAR contact person whether there are any block assessment options in this program.

C. Dates when PLAR assessment is available

PLAR assessment for this program is available from Sept 1 to June 15 in each academic year.

All PLAR assessments must be completed by June 15 of each academic year.

D. Special directions for this program

1. **Review** the PLAR process and FAQs and the information in this guide.

2. **Self-rate** your learning for each course using the Course Outlines in this guide.

3. **Consult** with the PLAR contact person for PLAR approval. Be prepared to provide your resume, course self-ratings (see section F), and a partially completed PLAR application. If you are approved for PLAR, the contact person will sign your PLAR application and explain next steps.

4. **Register** for PLAR at Registration/Enrolment Services once you have signed approval on your PLAR Application Form. The PLAR fee will be added to your student account.

5. **Finalize** a detailed Assessment Plan with your assigned assessor**.**

6. **Complete** assessment before your PLAR registration expires.

E. PLAR contact person

Contact one of the Program Heads below to arrange a consultation **after** you have read this guide and general PLAR information **and** rated yourself for each course (see next section). Consultation may be by phone, online, or in person. Be prepared to provide your resume, course self-ratings, and a partially completed PLAR application. If agreement is reached to go ahead with PLAR, the contact person will sign approval on your PLAR application and explain the next steps. Admission to the program is required before you can register for PLAR.

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F. Self-rating course outlines

Clicking on a course code below opens a page where you can rate yourself on the knowledge and skills assessed for PLAR credit. For Arts & Sciences courses, clicking on the course code opens another PLAR guide. The PLAR contact person for this program will refer you to another person to discuss PLAR for courses delivered by Arts & Sciences or another program/department.

COURSE CODE	COURSE NAME	Delivered by another department/program
Semester 1		
DSGN 108	3D Fabrication and Design	
ELEC 150	Passive Direct Current (DC) Circuits 1	
ELEC 151	Passive Direct Current (DC) Circuits 2	
ELEC 152	Passive Alternating Current (AC) Circuits 1	
ELEC 153	Passive Alternating Current (AC) Circuits 2	
ELTR 135	Active Components and Circuits	
MATH 158	Mathematics	Arts & Sciences
ORTN 102	Orientation to Industry	
Semester 2		
CNET 113	A+ Cisco IT Essentials 1	
CNET 114	A+ Cisco IT Essential 2	
COOS 101	LINUX+	

COURSE CODE	COURSE NAME	Delivered by another department/program
ELTR 137	Digital Integrated Circuits 1	
ELTR 138	Digital Integrated Circuits 2	
SHOP 144	Fabrication Techniques	
TCOM 105	Communications for Technicians	Arts & Sciences
Semester 3		
COM 200	Business Communications	
CWEB 100	Software Applications	
ELTR 148	Electronic Communication Principles 1	
INDG 100	Introduction to Indigenous Studies	Arts & Sciences
IOT 100	Internet of Things Security	
PROJ 213	Project	
TELE 113	Optical Fiber Basics	
TELE 115	Networking Essentials 1	
TELE 116	Networking Essentials 2	
Semester 4		
BUS 203	Entrepreneurship for Engineering Technologies	Computer Engineering Tech.
ELTR 113	Electronic Telecommunications Principles 1	
ELTR 149	Electronic Communication Principles 2	
IOT 101	Internet of Things Security	
MATH 204	Business Mathematics	Arts & Sciences
PROJ 108	Troubleshooting and Project	
SHOP 145	Installation Practices	
TELE 114	Wireless Systems	

DSGN 108 - 3D Fabrication and Design

You will use 3D modeling software to design multiple objects. You will use addition and subtraction techniques to make complex polyhedrons, threads, and hinges. You will edit an existing 3D model to be repurposed for alternate usage. You will be tasked with measuring an electronic device and design a case to be 3D printed.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Manage files and file types in modeling software.			
2. Create a polyhedron in 3D modeling software.			
3. Use addition and subtraction techniques to alter a polyhedron.			
4. Design functional structures.			
5. Use measuring techniques.			
6. Design a storage solution for an electronic device.			
7. Modify an existing design for an alternate purpose.			
8. Prepare a 3D model for 3D printing.			

ELEC 150 - Passive Direct Current (DC) Circuits 1

You will describe basic electronic principles and verify Ohm's Law and power equations. You will apply these principles and equations in analyzing and troubleshooting series, parallel and series-parallel circuits. You will gain practical experience using multi-meters and power supplies.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	ELEC 142

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Examine basic principles of electricity.			
2. Use multi-meters.			
3. Use bench power supplies.			
4. Verify Ohm's Law and power equations.			
5. Interpret simple series resistive circuits.			
6. Interpret simple parallel resistive circuits.			
7. Interpret simple series-parallel resistive circuits.			
8. Troubleshoot passive direct current (DC) circuits			

ELEC 151 - Passive Direct Current (DC) Circuits 2

You will study the principles of magnetism and electromagnetism. You will test, measure, and analyze inductors, capacitors, resistive networks, and transducers.

Credit unit(s):	3.0
Prerequisites:	ELEC 150
Corequisites:	none
Equivalent course(s):	ELEC 143

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Examine the principles of magnetism and electromagnetism.			
2. Examine the characteristics of inductors in direct current (DC) circuits.			
3. Examine the characteristics of capacitors in DC circuits.			
4. Analyze resistive network theorems.			
5. Test transducers.			

ELEC 152 - Passive Alternating Current (AC) Circuits 1

You will interpret and analyze waveforms using complex number math. You will troubleshoot and analyze resistive-capacitive (RC), and resistive-inductive-capacitive (RLC) circuits. You will gain experience using oscilloscopes, function generators and frequency counters.

Credit unit(s):	3.0
Prerequisites:	ELEC 151
Corequisites:	none
Equivalent course(s):	ELEC 144

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Interpret waveforms.			
2. Use oscilloscopes.			
3. Use function generators and frequency counters.			
4. Analyze complex number math.			
5. Examine resistive inductive (RL) circuits.			
6. Troubleshoot resistive-capacitive (RC) circuits.			
7. Troubleshoot reactive circuits			

ELEC 153 - Passive Alternating Current (AC) Circuits 2

You will test and troubleshoot transformer and resonant circuits. You will analyze resistive-capacitive (RC) and resistive-inductive- (RL) pulse response and resonant and passive filter response.

Credit unit(s):	3.0
Prerequisites:	ELEC 152
Corequisites:	none
Equivalent course(s):	ELEC 145

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Interpret resonant circuits.			
2. Interpret passive filter circuits.			
3. Test transformers.			
4. Troubleshoot transformer circuits.			
5. Interpret pulse response of resistive-capacitive (RC) networks.			

ELTR 135 - Active Components and Circuits

You will define regular and special diodes and their usage. You will describe and test transistor circuits. You will build operational amplifier circuits. You will apply techniques to troubleshoot integrated circuit (IC) timer and power supply circuits. You will describe coupling techniques used in communications systems. Your studies will help you identify common techniques used in signal amplification.

Credit unit(s):	4.0
Prerequisites:	ELEC 153
Corequisites:	none
Equivalent course(s):	ELTR 130

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Examine diodes.			
2. Describe transistors.			
3. Test transistors.			
4. Troubleshoot operational amplifier circuits.			
5. Troubleshoot integrated circuit timers.			
6. Troubleshoot power supply circuits.			
7. Describe coupling techniques.			

MATH 158 - Mathematics

You will study mathematics that is directly related to applications in the telecommunications networking field. You will perform operations with signed numbers and solve and manipulate equations. You will use powers of ten, engineering notation, and computer number systems. You will learn the fundamentals of Boolean algebra, basic trigonometry with vectors and phasors, the sine wave, and exponents and logarithms.

Credit unit(s): 3.0
Prerequisites: MAT 122, MATH 384
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Use basic mathematics.			
2. Use basic algebra and Laws of Exponents.			
3. Use the binary and hexadecimal number systems.			
4. Use Boolean algebra.			
5. Apply trigonometry and complex numbers to phasor problems.			
6. Apply Sine and Cosine graphs.			
7. Apply exponents and logarithms.			

ORTN 102 - Orientation to Industry

Your studies will include examining the possible roles of a technician and introduce you to professional ethics, industry standards and accountability. You will also study Occupational Health and Safety (OH&S) regulations.

Credit unit(s): 2.0
Prerequisites: ORTN 160
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe the role of a technician in industry.			
2. List areas of specialization in industry.			
3. Describe Occupational Health and Safety (OH&S) regulations.			
4. Discuss the impact that technology has on society.			
5. Demonstrate an awareness of the impact of all aspects of technology on society.			
6. Practice professional ethics, responsibility, and accountability.			

CNET 113 - A+ Cisco IT Essentials 1

You will install personal computer hardware using safe lab procedures. You will discuss the procedures used to maintain virtual and physical personal computer systems. You will investigate computer networks and common configurations. You will also review portable devices, printers, and scanners. Your studies will also prepare you to challenge the CompTIA A+ exam.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe personal computer systems.			
2. Demonstrate safe lab procedures and tool usage.			
3. Install computer hardware.			
4. Describe preventive maintenance and troubleshooting procedures.			
5. Describe networking concepts.			
6. Troubleshoot networks.			
7. Describe the fundamentals of laptops and portable devices.			
8. Troubleshoot printers and scanners.			
9. Discuss virtualization and cloud computing.			

CNET 114 - A+ Cisco IT Essentials 2

You will build on the foundation provided in CNET 113. You will be responsible for installing operating systems like Windows and Linux. You will perform preventative maintenance on operating systems. You will configure operating systems using the Graphical User Interface (GUI) and the Command Line Interface (CLI). You will review network security and discuss ways to keep networks safe. After completion of CNET 113, and CNET 114 you will qualify to write the Cisco exam to obtain a certificate of completion by Cisco. Your studies will also prepare you to challenge the CompTIA A+ exam.

Credit unit(s):	4.0
Prerequisites:	CNET 113(concurrent)
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Install operating systems.			
2. Configure the Windows operating system.			
3. Perform preventative maintenance procedures for the Windows operating system.			
4. Troubleshoot Windows operating system issues.			
5. Describe Mobile, Linux and macOS operating systems.			
6. Configure operating systems using a Command Line Interface (CLI).			
7. Demonstrate network security.			

COOS 101 - LINUX+

Your studies will focus on describing, installing, configuring, and administering Linux operating system workstations and servers. You will use troubleshooting practices to diagnose hardware and software problems and maintain the Linux network system. The course will help you prepare to write the CompTIA Linux+ exam.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe Linux requirements.			
2. Demonstrate installation process of Linux.			
3. Demonstrate installing software.			
4. Demonstrate basic services.			
5. Demonstrate hardware and access rights.			
6. Demonstrate users, groups, and file system.			
7. Demonstrate commands and expressions.			
8. Demonstrate system maintenance.			
9. Demonstrate troubleshooting practices.			
10. Demonstrate configuring system.			
11. Analyze diagnostic procedures.			

ELTR 137 - Digital Integrated Circuits 1

You will use and convert arithmetic operations in various number systems. You will test basic logic circuits and basic digital logic devices. Your studies will include describing and examining combinational and sequential logic circuits and testing converted circuits.

Credit unit(s):	4.0
Prerequisites:	ELEC 150
Corequisites:	none
Equivalent course(s):	ELTR 133

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Convert arithmetic operations in various number systems.			
2. Examine simple logic circuits.			
3. Examine digital logic devices.			
4. Examine combinational logic circuits.			
5. Examine sequential logic circuits.			
6. Test data conversion and transmission circuits.			
7. Test digital-to-analog and analog-to-digital circuits.			

ELTR 138 - Digital Integrated Circuits 2

You will examine the principles of programmable logic devices and microprocessor systems. You will write machine language programs and program a microcontroller. You will also assemble micro-controlled sensors and circuits.

Credit unit(s): 4.0
Prerequisites: ELTR 137(concurrent)
Corequisites: none
Equivalent course(s): ELTR 134

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Examine the operation of a programmable logic device.			
2. Explain the basic operation of a microprocessor system.			
3. Describe the basics operation of a microprocessor system.			
4. Test simple machine language programs.			
5. Apply steps to program a microcontroller.			
6. Assemble microcontroller circuits and programs.			

SHOP 144 – Fabrication Techniques

You will be introduced to the practical aspects of fabricating electronic prototypes and products. You will learn about surface mount and through-hole component identification, safe component handling, leaded and lead-free soldering, wire and cable, connectors, fasteners, hardware, chemicals and metalworking as they relate to the electronics field. The practical skills you will develop include soldering, de-soldering, wire harness assembly, chassis fabrication, chassis assembly and component and assembly testing. You will construct several electronic products as a core element of this course.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	SHOP 102

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Identify hand and power tools.			
2. Identify electronic components.			
3. Produce soldered connections.			
4. Remove electronic components by de-soldering.			
5. Practice safe component handling.			
6. Install solderless connectors.			
7. Use fasteners.			
8. Use electronic hardware.			
9. Fabricate and wire a chassis.			
10. Use chemicals.			
11. Use batteries.			
12. Use switches and relays.			

TCOM 105 - Communications for Technicians

You will learn and practice written, oral and interpersonal communication for the workplace. You will apply these skills as team members and in short presentations. You will also develop effective job search strategies.

Credit unit(s):   2.0
Prerequisites: none
Corequisites: none
Equivalent course(s):   none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Explain the communications model.			
2. Apply job-related communication strategies.			
3. Produce job-related written communication.			
4. Practice teamwork and presentation skills.			
5. Practice job search skills.			

COM 200 - Business Communications

You will study the principles of communication and develop fundamental employability skills. You will examine ways to apply communication skills to cross-cultural situations. You will develop effective writing and research skills.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	BCOM 105, BCOM 121

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Explain the process of communication.			
2. Recognize the importance of cultural awareness in communications.			
3. Apply grammar rules.			
4. Compose effective sentences and paragraphs.			
5. Use the writing process to produce documents.			
6. Prepare documentation activities including citations, evaluation of sources and paraphrases.			
7. Compose a short report.			

CWEB 100 - Software Applications

You will study the fundamental concepts concerning programming and software applications. You will use computer programming languages to create and execute code. You will become versed in conditional and modular coding, as well as writing loops and using inputs and outputs. You will debug your program and compare coding languages.

Credit unit(s):   3.0
Prerequisites: none
Corequisites: none
Equivalent course(s):   none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Define what is a program as well as data types, variables, and pseudocode.			
2. Demonstrate the use of conditional code as well as modular code.			
3. Practice writing loops, arrays, and convert strings into regular expressions.			
4. Compare Object Orientation languages to procedural languages.			
5. Differentiate between different coding languages.			
6. Troubleshoot by debugging and tracing though a section of code.			
7. Use techniques to execute code.			

ELTR 148 - Electronic Communication Principles 1

You will study noise concepts, amplitude modulation (AM) and single sideband (SSB) communications. You will also describe the fundamentals of amplitude modulation (AM).

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe noise concepts in communication circuits.			
2. Explain the fundamentals of amplitude modulation transmission.			
3. Describe amplitude modulation reception.			
4. Describe single sideband (SSB) communications.			

INDG 100 - Introduction to Indigenous Studies

You will receive an introduction to the Indigenous cultural groups within Saskatchewan. You will learn about the colonization of Indigenous peoples by the Canadian state. Your studies will help you discuss current issues and explore possible solutions.

Credit unit(s): 1.0
Prerequisites: none
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe Indigenous nations of Saskatchewan.			
2. Explain how colonization has impacted Indigenous peoples.			
3. Discuss current issues and possible solutions.			

IOT 100 - Internet of Things Fundamentals

You will study the objects and connections that make up the Internet of Things (IoT). You will build sensors and actuator systems using the Arduino microcontroller. You will create programs in Python that provide Internet of Things functionality to the Raspberry Pi computer. You will design an Internet of Things system that can solve problems in manufacturing, healthcare, or energy systems.

Credit unit(s):	4.0
Prerequisites:	CWEB 100
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe the components of an Internet of Things system.			
2. Assemble circuits using components that sense the environment.			
3. Create code that has an Internet of Things device make decisions.			
4. Apply code to the Arduino.			
5. Apply code to the Raspberry Pi.			
6. Examine how Internet of Things devices connect to networks.			
7. Identify the devices and services that make up fog and cloud networks.			
8. Analyze the requirements to keep Internet of Things devices and networks secure.			
9. Review the Business Model Canvas and how the Internet of Things is impacting businesses.			
10. Discuss industrial and commercial Internet of Things applications.			
11. Examine how the Internet of Things is being used in healthcare and at home.			
12. Create an Internet of Things solution to a real-world problem.			

PROJ 213 - Project

You will be introduced to project management. You will examine the basic theory of project planning and control, from project initiation to project close out. You will apply research techniques and various tools to practice project management theory. You will also discuss Indigenous managed projects in Canada.

Credit unit(s):   2.0
Prerequisites: CWEB 100
Corequisites: none
Equivalent course(s):   none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Examine project management concepts and the process to initiate a project.			
2. Create a project plan.			
3. Apply the methods used to execute a project plan.			
4. Explain monitoring requirements of a project.			
5. Discuss closing requirements of a project.			
6. Discuss Indigenous managed projects in Canada.			

TELE 113 - Optical Fiber Basics

You will be introduced to telecommunication transport technologies. You will practice your fiber cable measuring, splicing and installation skills. Your studies will help prepare you to be recognized by the Fiber-Optics-Association (FOA).

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe fundamentals of fiber optics and its applications.			
2. Describe Wavelength Division Multiplexing (WDM), Dense Wavelength Division Multiplexing (DWDM), Passive Optical Network (PON) and Gigabit Passive Optical Network (GPON) transport technologies.			
3. Describe fiber optic cable installation.			
4. Perform fiber cable installation.			
5. Perform fiber splicing and measurements including Optical Time Domain Reflectometer (OTDR).			
6. Characterize defective fiber optic cables; using OTDR.			

TELE 115 - Networking Essentials 1

Your studies will include a variety of topics to build your skills and understanding of networking. You will learn about networking devices and the IOS operating system. You will also learn how networks are set up, how devices are configured, how communication takes place on a network, and the basics of implementing network security best practices. You will enhance your confidence in communicating your knowledge and your ability to work in networking-related professions. Note: Upon completion of post course learning activities, you will be eligible to receive a Cisco Certificate of Completion.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Build a simple network.			
2. Describe the process and requirements for getting online.			
3. Operate devices on a local area network.			
4. Apply addresses to devices on a local area network.			
5. Describe how network services are provided.			
6. Manage a wireless Local area network device (LAN) device to protect data and the network.			
7. Manage network tools to mitigate security threats.			
8. Demonstrate the use of CISCO switches and routers.			
9. Troubleshoot a network connectivity problem.			

TELE 116 - Networking Essentials 2

You will learn the essential skills to configure Cisco devices as well as test and troubleshoot networks. Your studies will also focus on routing within the "cloud" and voice-over-internet-protocol (VOIP). You will practice some fundamental IP-Routing commands and VOIP skills in a lab environment. The course builds on knowledge and skills you developed in Networking Essentials 1. Note: Upon completion of post course learning activities, you will be eligible to receive a Cisco Certificate of Completion.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Configure Cisco Devices.			
2. Troubleshoot Networks.			
3. Describe basic Voice-Over-Internet-Protocol (VOIP) and Soft-Switches.			
4. Use hosted VOIP Private-Branch-Exchange (PBX).			

BUS 203 – Entrepreneurship for Engineering Technologies

You will learn the specifics of organizing and opening a small business. You will study the process of entrepreneurship from a technology-oriented background.

Credit unit(s): 2.0
Prerequisites: TCOM 102 or COM 200
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Analyze methods of identifying business opportunities.			
2. Explore the pros and cons of entrepreneurial opportunities within a technology environment.			
3. Compose market research to identify feasibility of a business idea.			
4. Create a financial plan.			
5. Identify components of a business plan.			
6. Prepare a business proposition.			

ELTR 113 - Electronic Telecommunication Principles 1

You will become familiar with the relationship between spectrum bandwidth and information. You will also learn special techniques and coded digital communications.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Explain the relationship between spectrum bandwidth and information.			
2. Describe special communication techniques.			
3. Describe coded communications (digital).			
4. Describe coded communications.			
5. Describe methods of transmission.			
6. Describe the characteristics and applications of transmission lines and antennas.			

ELTR 149 - Electronic Communication Principles 2

You will study describe frequency modulation (FM) transmission, generation, and reception. You will use a spectrum analyzer.

Credit unit(s):	3.0
Prerequisites:	ELTR 148
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe frequency modulation transmission.			
2. Describe frequency modulation generation.			
3. Describe frequency modulation reception.			
4. Use a spectrum analyzer.			

IOT 101 - Internet of Things Security

You will study the processes and techniques used to secure an Internet of Things (IoT) device. You will explain the need for Internet of Things security and explore potential security risks. You will perform activities that evaluate physical, application, and communication security for your Internet of Things device. You will create a risk management framework to establish a threat mitigation measure for your IoT device.

Credit unit(s):	4.0
Prerequisites:	IOT 100
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Evaluate Internet of Things security risks in an industry sector.			
2. Describe security requirements in Internet of Things system based on industry standards.			
3. Evaluate physical device security using threat modeling methods.			
4. Evaluate communication security using threat modeling methods in an Internet of Things system.			
5. Evaluate application security vulnerabilities using threat mitigation methods in an Internet of Things system.			
6. Develop a risk management framework using threat mitigation methods.			

MATH 204 - Business Mathematics

You will build algebraic skills applicable to studies in business. You will apply ratios, proportions and percentages to business problems involving discounts and markups. You will apply rates and variations to currency exchange rate calculations. The growths of simple and compound interest will be examined and compared. The concept of time value of money will be analyzed and applied in several scenarios. You will solve business problems involving ordinary annuities and amortizations.

Credit unit(s): 3.0
Prerequisites: none
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Solve business problems involving percentages, discounts, and markups.			
2. Perform currency exchange calculations.			
3. Solve business problems using simple interest.			
4. Solve problems involving compound interest.			
5. Examine the concept of time value of money.			
6. Perform calculations on ordinary annuities.			

PROJ 108 - Troubleshooting and Project

You will practice troubleshooting techniques through applying a logical course of action to problems. Your studies will consist of applied industry-standard, project-based troubleshooting focused on your Internet Protocol project. You will perform a presentation based on your Internet Protocol project.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Describe fundamental troubleshooting techniques.			
2. Troubleshoot an electronic circuit.			
3. Troubleshoot an electronic device's software.			
4. Troubleshoot network connections.			
5. Troubleshoot internet protocol connections and requests.			
6. Construct an internet-protocol (IP) based project.			
7. Test an internet-protocol (IP) based project.			
8. Perform an internet-protocol (IP) based project presentation.			

SHOP 145 - Installation Practices

Your studies will include terminating cables and describing installation safety practices. You will practice your residential and commercial installation and troubleshooting skills using a variety of systems including coax, entertainment, security, telephone and wireless.

Credit unit(s):   4.0
Prerequisites: none
Corequisites: none
Equivalent course(s):   none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Perform Cat5/6 cable installation and termination.			
2. Perform Coaxial cable installation and termination.			
3. Demonstrate the usage of personal protective equipment (PPE).			
4. Perform the required techniques to use a ladder safely.			
5. Demonstrate the procedures in a fall protection plan.			
6. Assemble a residential system.			
7. Manage a closed-circuit television (CCTV) system.			
8. Troubleshoot a residential phone service.			
9. Troubleshoot a residential home network.			
10. Operate a commercial system.			
11. Troubleshoot a commercial system.			
12. Design a blueprint of a home communications system.			

TELE 114 - Wireless Systems

Your studies will focus on cellular systems, wireless-data techniques, and the wireless evolution. You will practice your skills by setting-up a transmit-receive link.

Credit unit(s):	2.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	none

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	Competent	Learning	None
1. Interpret how Zigbee technology works and how it's used in industry.			
2. Interpret the function of Bluetooth technology and how it's used in industry.			
3. Interpret 5G/4G Long Term Evolution (LTE) technologies and how they are used in industry.			
4. Interpret Wi-Fi technology and how it's used in industry.			
5. Interpret Low Power Long Range Wide Area Network (LoRa WAN) technology and how it's used in industry.			
6. Interpret Code-Division Multiple Access (CDMA) technology and how it's used in industry.			