Computer Systems Technology 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 for courses in this program, you must first apply for admission and be accepted into the program. You must also 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 (prerequisite) or at the same time (corequisite). 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 corequisites.

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. Apply for admission to the program. See directions for applying.

5. **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.

6. **Finalize** an assessment plan with your assigned assessor.

7. **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		
ADMN 220	Organizational Behaviour	Business Diploma
CNET 184	Data Communications and Networking 1	
CODS 100	Data Automation	
COOS 181	Operating Systems Fundamentals	
COSC 180	Introduction to Programming	
CWEB 180	Web Site Development	
CWEB 195	UX Fundamentals	
Semester 2		
CDBM 190	Introduction to Database Management	

COURSE CODE	COURSE NAME	Delivered by another department/program
COHS 190	Hardware	
COOS 190	Server Administration	
COSA 190	Systems Analysis and Design	
COSC 182	Intermediate Programming 1	
CWEB 190	Internet Programming/Web Applications 1	
TCOM 190	Technical Communications	Arts &Sciences
Semester 3		
COSA 195	Systems Project	
COSC 183	Intermediate Programming 2	
COSC 195	Mobile Application Programming	
Semester 4		
CDBM 280	Database Management Systems	
COHS 280	Enterprise Systems Support	
COSA 280	IT Development Project 1	
COSC 286	Advanced Programming 1	
CSEC 280	Security 1	
CWEB 280	Internet Programming /Web Applications 2	
MATH 282	Mathematics of Computation	
TCOM 291	Career Path Search	
Semester 5		
CLTR 200	Culture and Diversity	
COOS 291	Advanced Operating Systems	
COOS 294	Cloud Infrastructure Administration	

COURSE CODE	COURSE NAME	Delivered by another department/program
COSA 290	IT Development Project 2	
COSC 292	Advanced Programming 2	
COSC 295	Advanced Mobile Application Programming	
CPMG 290	IT Development Project Management 2	
		Arts &Sciences
Semester 6		
COET 295	Emerging Technologies	
COOS 295	Systems Administration 3	
CSEC 295	Security Topics	

ADMN 220 - Organizational Behaviour

You will study human behaviour in organizations and develop the skills needed to deal with people at work. Your studies include content on individual behaviour, values, interpersonal relationships and communications, groups and team dynamics, organizational culture, leadership, and change. You will study these aspects of human behavior within the context of diverse formal organizations.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	BUS 182

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
Describe organizational behavior.			
Discuss diversity in organizations.			
Explain how emotions shape our behavior.			
Explain how personality and values influence behavior.			
Discuss how perception influences the decision-making process.			
Apply various motivational models to improve performance.			
Demonstrate effective teambuilding skills.			
Use the appropriate leadership style in a situation using leadership theory.			
Explain how power and organizational politics relate to performance.			
Explain conflict management.			
Describe organizational culture.			
Explain organizational change and strategies to overcome resistance to change.			

CNET 184 - Data Communications and Networking 1

In this course you will describe the major networking technologies and systems of modern networks, and be able to configure, manage and troubleshoot modern networks. This course presents content required in the objectives of the CompTIA Network+ certification exam.

Credit unit(s):   4.0
Prerequisites: none
Corequisites: none
Equivalent course(s):   CAD 191, CNET 180

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 network models.			
2. Explain network properties.			
3. Describe network implementations.			
4. Configure the TCP/IP protocol.			
5. Describe major TCP/IP services.			
6. Monitor and troubleshoot networks.			
7. Describe network attacks and security mechanisms.			
8. Describe remote networking.			
9. Identify network policies and procedures.			

CODS 100 - Data Automation

You will be introduced to data automation used to create, retrieve, and process unstructured data in a quick and efficient manner. You will learn about the functionality and features of data automation systems. You will be introduced to data automation concepts using an industry standard electronic spreadsheet. Your studies will focus on the appropriate application of an electronic spreadsheet with a focus on information management, advanced data analysis, and business intelligence.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	COAP 173

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. Create professional spreadsheets efficiently.			
2. Utilize macros and scripts to automate data.			
3. Use application interoperability.			
4. Manage data using tables.			
5. Analyze data visualizations.			
6. Manage multiple worksheets and workbooks.			
7. Analyze specialized data in large scale environments.			

COOS 181 - Operating Systems Fundamentals

You will be provided with the knowledge and skills required to install and configure desktop computers and other devices for use in a Windows business environment.

Credit unit(s): 4.0
Prerequisites: none
Corequisites: none
Equivalent course(s): COOS 180

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 operating system installations.			
2. Configure user access.			
3. Implement network configuration.			
4. Configure data access.			
5. Manage the desktop environment.			
6. Configure security settings.			
7. Maintain an operating system.			
8. Manage a Linux desktop operating system.			
9. Manage an Apple desktop operating system.			

COSC 180 - Introduction to Programming

You will learn how to perform elementary programming. You will create programs that use variables, allow for user input and output, and provide opportunities for simple decision strategies. You will also learn how to work with different variable types and how to debug programs. In addition, you will create and use strategies that involve repetition (looping) in your programs. You will create methods and work with elementary data collections (arrays). You will create programs utilizing various sorting and searching strategies that could be used with arrays and learn how to implement recursion.

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 elementary programming.			
2. Use a debugging tool.			
3. Create programs using strings and mathematical library routines.			
4. Create programs that utilize repetition.			
5. Create a program using methods.			
6. Create programs which utilize arrays to handle collections of primitive values and strings.			
7. Analyze and utilize common algorithms for sorting and searching arrays.			
8. Create recursive programs.			

CWEB 180 - Web Site Development

You will learn how to use HyperText Markup Language (HTML) to develop Web pages for delivery over the World Wide Web. You will also learn how to plan and develop HTML documents to build a Web site based on W3 standards and enhance HTML documents using current techniques such as Cascading Style Sheets (CSS) site management using current software.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	CNET 191

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. Create Hypertext Markup Language (HTML) documents.			
2. Design web pages using fonts and colours.			
3. Design web page layouts.			
4. Design web sites using backgrounds and other effects.			
5. Design device-independent websites.			
6. Create tables using HTML and Cascading Style Sheets (CSS).			
7. Create web page forms.			
8. Design web pages using multimedia resources.			
9. Create a web site.			

CWEB 195 - UX Fundamentals

You will study the concepts of user experience (UX). You will learn about user experience research techniques and how to present their findings. You will learn about user experience design techniques. You will plan and create a small website following user experience research and design strategies. You will evaluate the usability of websites.

Credit unit(s):	2.0
Prerequisites:	CWEB 190
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 user-centered design (UCD) practices.			
2. Explain user experience research (UXR) techniques and their results.			
3. Explain user experience design (UXD) techniques and their results.			
4. Create a prototype of a web page.			
5. Implement the prototype of a web page.			
6. Evaluate the usability of a website.			

CDBM 190 - Introduction to Database Management

You will study using an industry standard database management application program. You will learn how to design queries, forms, and reports to manage an underlying database. You will also create functions and procedures to add advanced functionality to the database management system. You will also learn how to create and query industry standard databases.

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. Use database tools with an existing database.			
2. Create databases and tables.			
3. Apply data relationships to maintain data integrity.			
4. Create queries that select data from tables.			
5. Compose queries that manipulate data.			
6. Design forms to create a user interface.			
7. Manage data using forms.			
8. Create reports to summarize and consolidate data.			
9. Create industry standard databases.			

COHS 190 - Hardware

You will be introduced to various computer hardware components. Your studies will cover the terminology associated with computer systems and peripherals. Additionally, your studies will provide you with the opportunity to install components, connect peripherals, and configure computer systems. Your studies will include operational and safety procedures.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	CNET 106, ELTR 287

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 operational and safety procedures.			
2. Identify computer components.			
3. Manage computer components.			
4. Recommend computer components.			
5. Demonstrate professionalism.			

COOS 190 - Server Administration

You will study network administration skills to manage on-premise network servers and services. You will develop the skills and knowledge to implement network addressing services, manage name resolution services, and configure network policy infrastructure. You will study remote access capability, virtualization, high availability, and disaster recovery. You will learn to oversee a complex network environment and configure numerous network services with a variety of administrative tools.

Credit unit(s):	4.0
Prerequisites:	COOS 181
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 server administration.			
2. Implement server infrastructure features.			
3. Describe file storage services.			
4. Apply network virtualization.			
5. Examine disaster recovery and high availability.			
6. Analyze server security.			
7. Examine remote access and services.			
8. Analyze server performance and migration.			

COSA 190 - Systems Analysis and Design

You will explore and apply the concepts required to analyze, design, create, install and document a systems project. You will be exposed to key project management concepts and practices. You will be introduced to an industry standard modeling graphical language.

Credit unit(s):	3.0
Prerequisites:	COSC 180
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 software life cycle.			
2. Explain project management concepts.			
3. Analyze methods for initiating a project.			
4. Prepare project analysis.			
5. Prepare project plans.			
6. Prepare unified modeling language (UML) models for software design.			
7. Design software using object-oriented best practices.			
8. Prepare project tests.			
9. Prepare a software project for deployment.			

COSC 182 - Intermediate Programming 1

You will learn how to create object templates (classes) and create and utilize objects in your programming. You will develop an understanding of inheritance and polymorphism, and you will utilize these object-oriented techniques to solve problems. You will gain experience working with standard collection classes and learn how to create exceptions. You will learn how to utilize file input and output (I/O) and receive instruction in the basic tenets of functional programming and learn to write programs with streams.

Credit unit(s):	4.0
Prerequisites:	COSC 180
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. Create programs that utilize objects and object-oriented techniques.			
2. Develop reusable classes through inheritance and interfaces.			
3. Create programs that utilize a collections framework.			
4. Create programs which utilize file input and output and exceptions.			
5. Use functional programming techniques.			

CWEB 190 - Internet Programming/Web Applications 1

You will receive instruction and practice in the development of client-side Web applications. You will use JavaScript to improve Web page design, validate forms, detect browsers, create cookies, and detect and respond to user actions.

Credit unit(s):	4.0
Prerequisites:	COSC 180, CWEB 180
Corequisites:	none
Equivalent course(s):	COSC 287

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 how JavaScript functions with web pages.			
2. Use JavaScript language constructs.			
3. Construct custom JavaScript objects.			
4. Use the Browser Object Model.			
5. Manage form data with JavaScript.			
6. Create Dynamic HTML (DHTML) web pages.			
7. Manage state information and security.			
8. Create dynamically updated web pages with Ajax.			

TCOM 190 - Technical Communications

You will learn the principles of effective technical writing in the computer industry to increase employability. You will analyze readers' needs for technical documents and write with correct grammar and technical style. You will prepare a variety of written technical reports both individually and collaboratively featuring meaningful content and professional presentation. The production of technical documentation for a variety of user groups will also be emphasized through a project collaboration with COHS 190.

Credit unit(s):	3.0
Prerequisites:	ADMN 220
Corequisites:	none
Equivalent course(s):	BCOM 121, TCOM 103

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. Customize situational analyses.			
2. Use correct grammar and technical style.			
3. Write technical documentation.			
4. Design professional technical documentation.			
5. Establish effective teamwork skills.			

COSA 195 - Systems Project

You will gain experience in systems analysis, design, implementation, and documentation. As a member of a team, you will develop a working system for a client by applying project processes in a team environment. You will prepare project requirement documents, develop acceptance test results, develop analysis models, and design models, and create a software implementation plan. You will facilitate project meetings, prepare project management documentation, assess progress using project management techniques, model storage of project documentation, and produce a project presentation for the client.

Credit unit(s):	4.0
Prerequisites:	COSA 190, TCOM 190, COSC 182
Corequisites:	none
Equivalent course(s):	COSP 191

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. Apply project processes in a team environment.			
2. Prepare project requirements document.			
3. Develop acceptance test results.			
4. Develop analysis models.			
5. Develop design models.			
6. Create a software implementation plan.			
7. Develop unit test results.			
8. Use software version control.			
9. Prepare a user manual for systems project.			
10. Use content management systems.			
11. Facilitate communication with clients.			

COSC 183 - Intermediate Programming 2

You will learn how to create multithreaded applications and learn how programs can be made to run in a parallel fashion. You will also learn how to create network-based programs using sockets. Finally, you will learn how to access database tables directly using java database connectivity (JDBC).

Credit unit(s):	3.0
Prerequisites:	COSC 182
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. Create programs using multithreading.			
2. Create programs that utilize network sockets.			
3. Create programs that access databases.			

COSC 195 - Mobile Application Programming

You will develop mobile application programs. Your studies will focus on the Android mobile environment and include an understanding of the mobile application development environment. You will develop simple and advanced mobile applications as well as understand mobile environment limitations and security issues with mobile applications. You will have an opportunity to publish mobile applications.

Credit unit(s):	3.0
Prerequisites:	COSC 182
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 mobile application development tools.			
2. Create a mobile application that uses basic user interface concepts.			
3. Create a mobile application that uses advanced user interface concepts.			
4. Create a mobile application that interacts with other Applications.			
5. Create a mobile application that stores and accesses data on a device.			
6. Create a mobile application that uses mobile device features.			
7. Create a mobile application for deployment on a mobile device.			
8. Create a mobile application incorporating advanced Android development concepts.			

CDBM 280 - Database Management Systems

You will receive instruction and practice in planning, designing, and accessing data in a relational database. You will study the theory behind relational databases, relational database nomenclature, and optimizing database design through normalization. You will create queries and manipulate a relational database using standard structured query language (SQL) statements.

Credit unit(s):	4.0
Prerequisites:	CDBM 190
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. Compose users' data requirements using conceptual modeling techniques.			
2. Implement data models into normalized database designs.			
3. Apply entity and referential integrity through constraints.			
4. Implement relational database designs.			
5. Design structured query language (SQL) statements to modify data.			
6. Design SQL statements to retrieve data from multiple tables.			
7. Design views.			
8. Discuss query optimization techniques.			

COHS 280 - Enterprise Systems Support

You will gain valuable expertise in assessing, documenting, and responding to an assortment of help desk situations. You will acquire knowledge regarding computer deployment in an enterprise environment. You will also deploy antivirus software, monitor software license compliancy, and perform network resource inventory in an enterprise environment.

Credit unit(s):	3.0
Prerequisites:	COHS 190
Corequisites:	none
Equivalent course(s):	COHS 290

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. Demonstrate Appropriate Responses to Help Desk Situations.			
2. Describe Systems Management Software.			
3. Use Software to Discover and Organize Network Resources.			
4. Manage Inventory in A Large Organization.			
5. Create Queries and Reports in Systems Management Software.			
6. Demonstrate Software Deployment.			
7. Use Endpoint Protection to Protect Client Computers.			
8. Manage Software License Compliancy.			
9. Use Enterprise Level Hardware.			

COSA 280 - IT Development Project 1

You will study and employ the practical and theoretical concepts obtained in first year systems analysis and design courses by building an IT system. You will work as part of a development team on an IT problem for an external industry client. Your project will include the production and demonstration of functioning components of the system each release within deadlines set out in your project management documentation.

Credit unit(s):	3.0
Prerequisites:	CDBM 280(concurrent), CWEB 280(concurrent), COSA 195
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. Adopt project processes in a team environment.			
2. Develop project requirements in communication with a client.			
3. Create internal documents for information technology (IT) development project.			
4. Create and maintain documentation to track changing requirements.			
5. Create a software implementation of a project design.			
6. Design automated tests for the IT development project.			
7. Use software version control.			

COSC 286 - Advanced Programming 1

You will study the use of predefined abstract data types and user defined abstract data types to improve program modularity. Your studies will include the design and implementation of abstract data types using object-oriented data structures. Topics will include alternative implementations of data structures and sorting techniques using interfaces, collections, and iterators.

Credit unit(s):	5.0
Prerequisites:	COSC 183
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. Combine appropriate programming constructs to implement advanced algorithms.			
2. Describe an abstract data type.			
3. Create linked list data structure using abstract data types.			
4. Generate a class from the abstract data type – Binary Tree.			
5. Generate a class from the abstract data type – Balanced Binary Tree.			
6. Generate a class from the abstract data type – Hash Table.			
7. Generate a class from the abstract data type – Graph.			
8. Implement graph algorithms to solve common problems.			
9. Implement advanced sorting algorithms.			
10. Develop a solution to a problem using collections.			

CSEC 280 - Security 1

You will learn the fundamentals of computer security. You will learn to recognize several areas of security attacks, examine current security measures, and evaluate techniques to enhance existing measures. You will examine methods to maintain the integrity of an organizations network infrastructure and the day-to-day operations.

Credit unit(s):	4.0
Prerequisites:	CNET 184
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. Discuss Security Fundamentals.			
2. Identify Security Threats and Vulnerabilities.			
3. Examine Data, Application and Host Security.			
4. Evaluate network security.			
5. Describe access control, authentication, and account management.			
6. Describe compliance and operational security.			
7. Discuss risk management.			
8. Discuss troubleshooting and managing security incidents.			

CWEB 280 - Internet Programming/Web Applications 2

You will study the development of server-side web applications. You will learn how to write scripts that allow remote users to interface with databases existing on a World Wide Web server. You will become familiar with server-side programming to display website content dynamically as required.

Credit unit(s): 4.0
Prerequisites: COSC 183, CDBM 280(concurrent)
Corequisites: none
Equivalent course(s): COSC 293

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. Construct Web pages using basic server-side language features.			
2. Construct secure Web pages using server-side objects.			
3. Apply server-side state management features.			
4. Manage database tables.			
5. Create objects to connect to a database server.			
6. Design web pages that retrieve and modify data stored in a database.			
7. Use modern client/server communication methods to retrieve and modify Web page data.			
8. Develop a secure Web site using all the elements covered in this course.			

MATH 282 - Mathematics of Computation

You will investigate the characteristics of discrete and continuous systems from a programming perspective and compare and contrast programming techniques required for dealing with discrete system data (Boolean values, integer numbers, and character data) with those for continuous system data (floating point numbers). You will also investigate the nature and propagation of error as a result of programming. You will explore number systems and programming techniques for solving simultaneous equations, integrating functions, finding roots, compressing data and encrypting data.

Credit unit(s):	3.0
Prerequisites:	COSC 183
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 sources of computational error.			
2. Write programs to calculate numeric quantities.			
3. Write programs to solve problems involving simultaneous linear equations.			
4. Write programs for computing integrals of functions.			
5. Write programs to use matrix arithmetic to work with graphic objects.			
6. Use complexity to evaluate algorithms.			
7. Implement data encryption algorithms.			
8. Implement data compression algorithms.			

TCOM 291 - Career Path Search

You will prepare a career path portfolio based on your accumulated skills, qualifications, and accomplishments. You will create a resume and cover letter to target an information technology (IT) job posting. In a simulated job interview, you will answer behavioural questions and demonstrate the use of a career path portfolio. You will participate in industry partner presentations.

Credit unit(s):	1.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	JOBS 288, SEM 283, TCOM 295

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. Discuss information technology related presentations.			
2. Create employment documents.			
3. Demonstrate interview skills.			

CLTR 200 - Culture and Diversity

Your studies will focus on the many dimensions of culture and approaches to promoting inclusion and innovation. You will explore culture in Canadian society as it pertains to Indigenous and immigrant populations. You will also examine the correlation between culture and diversity.

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. Discuss how cultural dimensions shape the diversity of Canada.			
2. Discuss the prominent dimensions of culture in Canadian society such as tradition, familial relations, and employment.			
3. Describe the interrelationships produced when the dimensions of various cultures interact.			
4. Describe the dimensions of culture as it relates to Indigenous and immigrant populations.			
5. Discuss the correlation between culture, diversity, and innovation.			

COOS 291 - Advanced Operating Systems

You will learn to work with both the command line and graphical interfaces of the Linux operating system. In addition, you will learn about the file system, shell programming, system, and network administration. Special emphasis will be placed on learning about Linux networks.

Credit unit(s):	5.0
Prerequisites:	COOS 181
Corequisites:	none
Equivalent course(s):	COOS 280

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. Demonstrate competency in using Linux in both command Line and Graphical User Interface (GUI) mode.			
2. Describe the Linux File System.			
3. Perform administrative tasks with a scripting language.			
4. Perform system administration.			
5. Perform network administration.			
6. Manage a network.			
7. Manage Web content servers.			
8. Configure interoperability between Linux and Windows networks.			

COOS 294 - Cloud Infrastructure Administration

You will study cloud fundamentals and common cloud administrator technical tasks including managing identities and governance, implementing and managing storage services, deploying and managing computing services, configuring and managing virtual networking services, and monitoring and maintaining cloud services.

Credit unit(s):	4.0
Prerequisites:	COOS 190
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 cloud concepts.			
2. Describe cloud architecture and services.			
3. Manage cloud identity services and governance.			
4. Manage cloud storage services.			
5. Manage cloud computing services.			
6. Manage cloud network services.			
7. Manage cloud database services.			
8. Manage cloud monitoring services.			
9. Manage cloud backup services			

COSA 290 - IT Development Project 2

You will continue your work as part of a development team on an IT problem for an external industry client that was started in COSA 280. Your project will include the production and demonstration of functioning components of the system each released within deadlines set out in your project management documentation. You will present the final product to the client.

Credit unit(s):	6.0
Prerequisites:	COSA 280, CDBM 280
Corequisites:	CPMG 290
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. Adapt project processes in a team environment.			
2. Manage project requirements.			
3. Create acceptance test.			
4. Apply design models and analysis models to changing requirements.			
5. Develop additional software for expanding product functionality.			
6. Create unit test results.			
7. Use software version control.			
8. Revise user manual and installation manual.			

COSC 292 - Advanced Programming 2

You will study structured programming techniques, a procedural language, functions, pointers, file input/output, records and dynamic memory management to create applications.

Credit unit(s): 4.0
Prerequisites: COSC 286
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. Design a solution to a problem using structured programming techniques.			
2. Create a procedural language application from a structured programming design.			
3. Use language libraries and functions when developing a procedural program.			
4. Develop function libraries in a procedural language.			
5. Develop code to reference and manipulate static memory with pointers.			
6. Develop code to reference and manipulate dynamic memory with pointers.			
7. Design records for the storage of non-homogeneous data.			
8. Develop code to create, manipulate, and store records.			

COSC 295 - Advanced Mobile Application Programming

You will study basic iOS application development for Apple mobile devices and cross platform development that works on Android and Apple devices. Your studies will include an introduction to a programming language required to create applications for iOS mobile devices. Also, you will utilize a cross platform development tool to create a mobile application that can run on multiple platforms.

Credit unit(s):	4.0
Prerequisites:	COSC 195
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. Discuss application development for iOS mobile devices.			
2. Explain basic programming constructs necessary for an iOS application.			
3. Develop software that can run on an iOS device using decisions and repetitions.			
4. Develop software that can run on an iOS device using object oriented concepts.			
5. Develop software that can run on an iOS device using advanced concepts.			
6. Explain the rational for using a cross platform development tool to create applications.			
7. Develop a mobile application using a cross platform development tool that can run on multiple device platforms.			
8. Develop a mobile application using a cross platform development tool that interacts with other applications on the device.			
9. Develop a mobile application using a cross platform development tool that interacts with device hardware.			

CPMG 290 - IT Development Project Management 2

You will continue your project management work from CPMG 280. You will continue to improve your project management, documentation, meeting, and presentation skills. As well, you will make use of project monitoring techniques. As a contributor to a computer system development project, you will prepare for and participate in project meetings, prepare project management documentation, adapt project management processes as required, manage progress using project management techniques, manage storage of project documentation and deliver a presentation on a project.

Credit unit(s):	2.0
Prerequisites:	COSA 280
Corequisites:	COSA 290
Equivalent course(s):	TCOM 290

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. Improve project management skills to manage an IT development project for an external client.			
2. Plan client meetings to efficiently facilitate the progress of an IT development project.			
3. Organize project documentation in a content management system.			
4. Create release plans for an IT development project.			
5. Apply project monitoring techniques for an IT development project.			
6. Demonstrate your IT development project.			

COET 295 - Emerging Technologies

You will study the subject of new/emerging technologies, and you will examine how these technologies can change existing markets and development environments. You will gain experience in working with software and/or hardware that can be classified as part of the emerging technology paradigm.

Credit unit(s):	3.0
Prerequisites:	COSC 292
Corequisites:	none
Equivalent course(s):	COOS 290

Use a checkmark (✓) to rate yourself as follows for each learning outcome	Competent	Learning	None
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.			
1. Explain the dynamics of emerging technologies.			
2. Identify emerging technologies that are changing the marketplace.			
3. Identify the processes required to implement emerging technologies.			
4. Develop a plan for introducing a new technology in a simulated workplace setting.			
5. Implement the new technology in a simulated workplace setting.			

COOS 295 - Systems Administration 3

You will learn how to deploy and configure Active Directory Domain Services (AD DS) in a distributed environment. You will learn how to implement Group Policy, perform backup and restore, as well as monitor and troubleshoot AD-related issues with Windows server. You will deploy other AD server roles such as Active Directory Federation Services (AD FS) and Active Directory Certificate Services (AD CS).

Credit unit(s):	3.0
Prerequisites:	COOS 190
Corequisites:	none
Equivalent course(s):	CNET 295

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 domain controllers installations.			
2. Manage active directory objects.			
3. Configure domain security settings.			
4. Manage active directory.			
5. Configure Active Directory for complex environments.			
6. Configure Group Policies.			
7. Configure Digital Certificate Infrastructure.			
8. Integrate Complex Services into Active Directory.			

CSEC 295 - Security Topics

You will learn various attack and defense methodologies. While exploring current and emerging security topics you will learn how computer security affects businesses and business data. You will be introduced to the protection of an organizations assets, intellectual property and employees as well as methods for maintaining business continuity.

Credit unit(s):	3.0
Prerequisites:	COHS 280
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 Ethical Hacking.			
2. Apply the techniques of Information Gathering.			
3. Analyze attack and defense methodologies.			
4. Demonstrate mobile and wireless security.			
5. Demonstrate Internet of Things security.			
6. Discuss Cloud security.			
7. Investigate Social Engineering.			
8. Examine Cyber Warfare and advanced topics.			