Environmental Engineering 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.

Kaya Forest, Program Head
Saskatchewan Polytechnic, Moose Jaw
Phone: 306 – 691 - 8423
Email: forestk@saskpolytech.ca

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
Year 1 - Semester 1		
CADD 120	Computer Aided Drafting 1	
ENVR 102	Environmental Sampling and Analysis	
ENVR 103	The Living World	
MAT 110	Mathematics for Engineering Technologies	Arts & Sciences
SEM 101	Technology Seminars	
SRVY 120	Surveying 1	
TCOM 102	Workplace Communication	Arts & Sciences
TERR 101	Engineering Geology	
TERR 102	Engineering Geology Laboratory	
Year 1 - Semester 2		
CAMP 104	Environmental Field Work 1	
ENVR 101	Environmental Science and Technology 1	
ENVR 105	Environmental Site Assessment 1	

COURSE CODE	COURSE NAME	Delivered by another department/program
GIS 110	Global Navigation Satellite Systems (GNSS) and Geographic Information System & (GIS) fundamentals	
MAT 111	Calculus for Engineering Technologies	Arts & Sciences
SOIL 102	Soil Testing, Taxonomy and Classification	
TCOM 103	Technical Communication	Arts & Sciences
Co-operative Work Term 1		
COOP 101	Co-operative Work Term	
Year 2 - Semester 3		
CHEM 200	Engineering Chemistry	
ENVR 204	Ecosystems	
ENVR 236	Environmental Monitoring	
HYDO 201	Groundwater Technology	
LABS 202	Environmental Laboratory Analysis	
PHYS 104	Physics for Engineering Technologies	Arts & Sciences
STAT 201	Statistics for Engineering Technology	Arts & Sciences
Co-operative Work Term 2		
COOP 201	Co-operative Work Term	
Year 3 - Semester 4		
CAMP 204	Environmental Field Work 2	
CAMP 205	Boreal Field Work	
CHEM 201	Environmental Chemistry	
ENVR 200	Atmospheric Environment	
ENVR 205	Environmental Site Assessment 2	
ENVR 206	Energy Resource Management	
ENVR 208	Applied Ecology	

COURSE CODE	COURSE NAME	Delivered by another department/program
HYDO 202	Hydrology	
Year 3 – Semester 5		
ENVR 203	Liquid and Solid Waste Management	
ENVR 207	Remediation and Reclamation	
ENVR 228	Environmental Management	
ENVR 229	Environmental Impact Assessment	
HYDO 200	Contaminant Hydrogeology	
MGMT 212	Project Management	
PROJ 206	Capstone Project	
TCOM 104	Applied Research in Technology	Arts & Sciences

CADD 120 - Computer Aided Drafting 1

You will develop fundamental computer aided drafting (CAD) skills using industry-standard software. You will construct two-dimensional geometric construction, dimensioning and drawing output.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	DRFT 105

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 the Computer Aided Drafting (CAD) software and drawing environment.			
2. Demonstrate the use of foundational commands of CAD software.			
3. Construct basic geometric objects and annotations.			
4. Apply file management techniques and drawing templates.			
5. Perform editing techniques.			
6. Create drawings for output.			
7. Construct basic blocks.			
8. Employ hatching.			
9. Manage raster images.			

ENVR 102 - Environmental Sampling and Analysis

You will follow safe practices and be required to assist in identifying risk and measures to reduce risk. You will develop an understanding of hazardous materials through working with content provided in safety data sheets. You will examine protocols for environmental sampling including collection, preservation, and transportation of samples. You will collect field measurements and be introduced to statistical analysis as a means of managing measurement error.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	MEAS 109

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. Follow safe practices while working in laboratory and field settings.			
2. Practice collecting samples in environmental matrices using accepted protocols.			
3. Interpret data collected during lab and field activities.			
4. Complete introductory statistical analysis on collected data.			
5. Practice documenting procedures and activities.			
6. Examine the risks associated with hazardous materials.			
7. Discuss basic chemistry principles required to work in a laboratory and field setting.			

ENVR 103 - The Living World

You will explore the mechanisms of evolution and the vast variety of life we see on Earth. You will be introduced to plant and animal morphology required to aid in identification of these organisms.

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 the mechanisms that drive the evolution of life on Earth.			
2. Identify important features of plant and animal cells.			
3. Classify a variety of organisms based on their taxonomy.			
4. Identify important anatomical characteristics of plants.			
5. Identify important anatomical characteristics of animals.			

MAT 110 - Mathematics for Engineering Technologies

You will gain foundational knowledge of mathematical topics applicable to engineering technologies. You will study formula manipulations, factoring of algebraic expressions, geometry and trigonometry, exponents and logarithms, and functions and their graphs. This course is intended to build problem solving and critical thinking skills, and to prepare you for studies in calculus.

Credit unit(s):	4.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	MAT 100, MAT 101, MAT 110CE, MATH 182, MATH 193

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 measurements, formulas, and functions.			
2. Practice mathematical operations with algebraic expressions.			
3. Apply principles of geometry.			
4. Analyze trigonometric functions and vectors.			
5. Examine systems of linear equations.			
6. Examine algebraic equations and functions.			
7. Analyze exponential and logarithmic functions.			

SEM 101 - Technology Seminars

Your orientation will include discussions regarding the role of technicians/technologists in the workplace and society. You will study time management skills, diversity in the workplace, principles of sustainability and safety requirements.

Credit unit(s): 1.0
Prerequisites: none
Corequisites: none
Equivalent course(s): ENGM 181, ETHC 183, ORTN 120, SEM 104

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. Develop study and time management skills.			
2. Recognize diversity in the workplace.			
3. Recognize principles of sustainability to work.			
4. Discuss professional ethics, responsibility, and accountability.			
5. Discuss the impact of technology on society.			
6. Describe workplace safety procedures.			

SRVY 120 - Surveying 1

You will receive an introduction to the basics of surveying. The course content includes horizontal measurements, levelling, angle and direction measurement, computations, traverses and drafting plans.

Credit unit(s): 4.0
Prerequisites: none
Corequisites: none
Equivalent course(s): SRVY 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. Discuss survey fundamentals.			
2. Discuss various methods of measuring distances.			
3. Assess the errors associated with distance measurements.			
4. Measure the various ground distances.			
5. Practice various techniques of differential leveling in vertical control surveys.			
6. Create closed and open level loops with appropriate correction method.			
7. Discuss various types of traverse surveys.			
8. Calculate directions utilizing azimuths and bearings.			
9. Measure internal angles and horizontal distances in a closed traverse.			
10. Revise field/observed measurements of traverse.			
11. Determine the land location, and size, of a legal land description under the Dominion Land Survey (DLS) system and various coordinate systems.			
12. Apply the 'standard practice of surveying' in recording field notes with relevant sketches.			

TCOM 102 - Workplace Communication

You will examine the employability skills required in the workplace. You will discuss the communication process, and practice effective interpersonal communication techniques and conflict resolution. You will use workplace writing and job search skills.

Credit unit(s):   3.0
Prerequisites: none
Corequisites: none
Equivalent course(s):   COM 160, COMM 191, JOBS 190, JOBS 288, JOBS 290, TCOM 102CE, TCOM 120, TCOM 140, TMGT 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. Examine fundamentals of workplace communication.			
2. Discuss conflict resolution techniques.			
3. Apply job-related interpersonal and oral communication strategies.			
4. Apply workplace writing skills.			
5. Use job search skills.			

TERR 101 - Engineering Geology

You will study physical geology including the origin, composition and characteristics of the major minerals and rock classifications. You will study geologic processes, landforms and geologic structures created by these processes referencing Saskatchewan's glaciated terrain.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	TERR 102
Equivalent course(s):	TERR 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. Describe the origin and physical characteristics of various rock and soil types.			
2. Describe the effects of mass wasting and running water on the landscape.			
3. Describe the origin of groundwater and the characteristics of wells.			
4. Identify various glacial landforms and how they are significant in terms of type of soil materials and origin.			
5. Describe the origin of deserts and how the landscape evolves.			
6. Describe the process of plate tectonics and the geological features associated with it.			
7. Describe crust deformation and mountain building processes.			

TERR 102 - Engineering Geology Laboratory

You will learn fundamental mapping concepts and about map reference systems. You will learn to read and extract information from topographic maps. You will be introduced to aerial photo interpretation as a tool to help identify natural surface features. You will study the characteristics of features formed by the advance and retreat of massive ice sheets during the last glacial period.

Credit unit(s):	2.0
Prerequisites:	none
Corequisites:	TERR 101
Equivalent course(s):	TERR 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. Describe the basic elements of a map.			
2. Describe the coordinate reference systems used in mapping.			
3. Describe the Western Canada Dominion Land Survey system.			
4. Describe the National Topographic System (NTS).			
5. Demonstrate proficiency reading a topographic map sheet.			
6. Compare the evolution of administrative boundaries within Canada with the pre-contact extent of First Nations' territories.			
7. Describe the characteristics of glaciated features observed on aerial photos.			

CAMP 104 - Environmental Field Work 1

You will participate in field exercises related to baseline environmental assessment and characterization of a subject site using the knowledge gained in previous courses supplemented with new field procedures. You will utilize GIS software to analyze field data spatially and use this to allow you to identify the baseline conditions of a subject site.

Credit unit(s):	4.0
Prerequisites:	ENVR 102
Corequisites:	GIS 110
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. Employ safe practices while performing field work.			
2. Prepare field sketches and notes.			
3. Collect topographic survey data using Global Navigation Satellite System (GNSS) receivers.			
4. Create a topographic map using Geographic Information System (GIS) software.			
5. Describe the requirements of an environmental monitoring program.			
6. Describe the appropriate protocol for collection of environmental samples.			
7. Conduct analyses for specified analytes using field kits.			
8. Perform checks and calculations to ensure data accuracy and integrity.			

ENVR 101 - Environmental Science and Technology 1

You will examine the natural world scientifically in an attempt to explain how life on earth is sustained. You will review human population development with its increasing resource requirements. You will study sustainable resource management applied to urban and natural environments including associated risks of hazardous materials. You will take a global perspective using objective risk analysis and environmental ethics.

Credit unit(s):	2.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	ENVR 440

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 of increasing human populations and environmental effects.			
2. Explain risk analysis and its application to resource management.			
3. Describe sustainable development.			
4. Recognize the risks associated with harvest of renewable resources.			
5. Recognize the risks associated with harvest of non-renewable resources.			
6. Recognize the risks associated with the storage of hazardous materials and the disposal of municipal, industrial, and hazardous wastes.			

ENVR 105 - Environmental Site Assessment 1

You will acquire the knowledge needed to plan, design, organize and implement the first phase of an Environmental Site Assessment (ESA). During the Phase I ESA, you will collect current and historical site information and identify potential and actual environmental concerns associated with the subject site and the adjacent properties.

Credit unit(s):	3.0
Prerequisites:	TERR 101, TERR 102
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 the nature and scope of environmental problems with reference to relevant legislative requirements for environmental permits and approvals for construction projects.			
2. Interpret the site assessment framework.			
3. Identify the uses and principles of Phase I Environmental Site Assessments (ESAs).			
4. Discuss roles, responsibilities, and limitations of the Phase I ESA.			
5. Perform a Phase I ESA.			
6. Prepare a Phase I ESA report.			

GIS 110 - Global Navigation Satellite Systems (GNSS) and Geographic Information System (GIS) Fundamentals

Your studies will focus on the fundamentals of Global Navigation Satellite Systems (GNSS) and a Geographic Information System (GIS). You will learn the components of a GNSS, its signal structure, and explore the effects that errors have on the system and its position accuracies. You will examine the different positioning modes available when using a GNSS (i.e. absolute, differential and real-time). Your fieldwork will involve using a GNSS for basic surveying applications. You will apply GIS tools for database management and mapping functionalities using data from existing government sources and GNSS surveys.

Credit unit(s):	4.0
Prerequisites:	TERR 102
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 2D and 3D coordinate systems.			
2. Describe GIS concepts.			
3. Perform mapping with GIS.			
4. Perform GIS analysis.			
5. Discuss concepts of navigation and GNSS.			
6. Conduct GNSS Surveys.			

MAT 111 - Calculus for Engineering Technologies

You will gain knowledge of calculus topics applicable to engineering technologies. You will study derivatives, integrals and differential equations, and their applications. This course is intended to further build problem solving and critical thinking skills, and to demonstrate the importance of calculus in engineering practices.

Credit unit(s):	4.0
Prerequisites:	MAT 110
Corequisites:	none
Equivalent course(s):	CALC 100, CALC 181, CALC 190, MAT 246

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 derivative through the study of slopes and limits.			
2. Calculate derivatives of functions.			
3. Use first and second derivatives to graph functions.			
4. Analyze technical problems involving rates of change and optimization.			
5. Examine the indefinite and definite integral.			
6. Calculate integrals of functions.			
7. Analyze technical problems with integration.			
8. Solve first-order differential equations.			

SOIL 102 - Soil Testing, Taxonomy and Classification

Your studies will focus on data collection, analysis and report- writing for the identification, classification and determination of properties of earth materials. You will perform industry-standard test procedures on soil and aggregate. You will evaluate the methods and determine the results. This course is a foundation for the study of soils and parent material from a Saskatchewan landscape perspective.

Credit unit(s):	4.0
Prerequisites:	TERR 101
Corequisites:	none
Equivalent course(s):	SOIL 120

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 geological processes, materials, and landforms in Saskatchewan.			
2. Describe soil, its components and various uses and approaches for studying soil classifications.			
3. Assess soil architecture and its physical properties.			
4. Discuss the soil forming factors and their relationship to soil.			
5. Classify soils using various classification systems.			
6. Perform American Society for Testing and Materials (ASTM) methods of soil testing.			
7. Discuss the uses and safe operation of a nuclear densometer.			
8. Prepare laboratory reports.			

TCOM 103 - Technical Communication

You will use research skills to find technical information and cite it correctly. You will conduct effective meetings and produce supporting documents. As well, you will discuss technical report purposes and formats, write short technical reports and present technical information.

Credit unit(s): 3.0
Prerequisites: TCOM 102
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. Conduct research for a technical report.			
2. Use correct grammar and technical style.			
3. Create technical reports.			
4. Conduct meetings.			
5. Present technical information.			

COOP 101 - Co-operative Work Term

Your co-operative education term will provide you with the opportunity to consolidate theoretical and practical concepts learned in the classroom and gain valuable experience in a work setting.

Credit unit(s):	0.0
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. Develop personal employment search skills.			
2. Communicate in the workplace.			
3. Work as a member of the team.			
4. Demonstrate effective work habits.			
5. Become familiar with safe work practices.			
6. Develop personal management skills.			
7. Identify roles and responsibilities of personnel in the workplace.			
8. Assimilate learned theories and concepts in a workplace setting.			
9. Demonstrate essential skills.			

CHEM 200 - Engineering Chemistry

You will study the general principles of chemistry and chemical calculations. The concepts and application of stoichiometry, concentration determination, equilibrium, acid-base chemistry, pH, volumetric and gravimetric analysis will be used to describe the chemistry of aquatic systems.

Credit unit(s):	4.0
Prerequisites:	MAT 110, MEAS 109 or MEAS 110
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 the general principles of chemistry and their specific relationship to technology.			
2. Analyze the concepts, principles, and generalizations of chemical behaviour.			
3. Interpret the mathematical functions that express chemical relationships.			
4. Differentiate between the Gas Laws and their applications.			
5. Examine the structure of compounds relating bonding and molecular bonding to chemical and physical properties.			
6. Identify the various states of matter and the properties that attribute to these phases.			
7. Examine the factors that alter the equilibrium in a chemical reaction.			
8. Examine the theories of solubility and solution chemistry.			
9. Examine the nature, behaviour, concentration and strength of acids and bases.			
10. Apprise the indicators of chemical change utilizing the Ksp, Kw, and Ka theories.			
11. Apply oxidation numbers to identify redox reactions.			
12. Analyze the nature and behaviour of the atomic nucleus including radioactive isotopes and their practical application.			

ENVR 204 - Ecosystems

You will study how energy flows through ecosystems. You will explore the variety of ecoregions throughout Saskatchewan, Canada, and the world. You will cover the role of succession in shaping environmental landscapes. You will be introduced to a variety of local flora and fauna.

Credit unit(s):	4.0
Prerequisites:	ENVR 103
Corequisites:	none
Equivalent course(s):	ENVR 234

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 how energy and nutrients flow through ecosystems.			
2. Discuss the trophic structure of ecosystems and the role that different organisms play in that structure.			
3. Compare primary and secondary succession.			
4. Classify ecosystems found throughout the world with a focus on the ecoregions of Saskatchewan.			
5. Identify various species of local flora and fauna.			
6. Compare the ecological needs of various species of local flora and fauna.			

ENVR 236 - Environmental Monitoring

You will be introduced to the relationships between terrestrial, riparian and aquatic environments. You will investigate various protocols to monitor and assess the health of each environment. Emphasis will be placed on demonstrating safe practices for outdoor field activities and laboratory settings. The risks of various substances on environmental and human health will be presented.

Credit unit(s):	4.0
Prerequisites:	ENVR 102
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 that contribute to watershed health.			
2. Analyze the requirements of an environmental monitoring program.			
3. Apply the appropriate protocol for collection of soil and water samples.			
4. Select appropriate field tests for terrestrial and aquatic environments.			
5. Operate equipment related to sample collection and field measurements.			
6. Conduct analyses for specified analytes using field kits and standard methods.			
7. Evaluate the results of measurements and analyses against applicable regulatory standards and guidelines.			
8. Select appropriate mitigation measures to reduce or eliminate the environmental impacts of various construction and industrial situations that may be encountered in the role of an environmental monitor.			

HYDO 201 - Groundwater Technology

You will study the principles of applied hydrogeology including groundwater flow, drilling, well design and construction. You will also discuss the maintenance requirements of wells, groundwater protection and groundwater approval processes.

Credit unit(s):   4.0
Prerequisites: MAT 111
Corequisites: PHYS 104
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 basic terms used in applied hydrogeology.			
2. Calculate the properties of aquifers.			
3. Analyze the principles of groundwater flow.			
4. Calculate groundwater flow to wells.			
5. Calculate soil moisture and groundwater recharge.			
6. Describe well drilling methods.			
7. Explain water well design.			
8. Describe well head protection.			
9. Prepare a Groundwater Investigation Report.			

LABS 202 - Environmental Laboratory Analysis

You will focus on learning the lab skills required to obtain water quality measurements. You will apply these skills to proper sampling protocol and laboratory analysis, with an emphasis on interpreting the laboratory results and applying them to applicable federal and provincial regulations and objectives.

Credit unit(s):	3.0
Prerequisites:	MAT 110
Corequisites:	CHEM 200
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. Develop good laboratory practice in accordance with accepted principles of quality assurance and safety.			
2. Assess laboratory analyses using standard methods, Canadian Council of Ministers of the Environment (CCME) National Classification System for Contaminated Sites (NCSCS) and American Society for Testing and materials (ASTM) terminology.			
3. Conduct water quality analyses using Standard Methods.			
4. Conduct water quality analyses using field based instrumentation.			
5. Assess the suitability of field based methods compared to Standard Methods.			
6. Interpret the accuracy and precision of statistical data.			
7. Evaluate analytical results against applicable federal and provincial water quality regulations and objectives.			

PHYS 104 - Physics for Engineering Technologies

You will apply vectors and Newton's laws of motion to force systems. You will study work, power, and the conservation of mechanical energy. You will study momentum and collisions. You will study the properties of static and dynamic fluids, thermal energy and heat. This course is also intended to build critical thinking and problem-solving skills.

Credit unit(s): 3.0
Prerequisites: none
Corequisites: none
Equivalent course(s): PHYS 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. Apply methods of vector addition to concurrent and non-concurrent force systems.			
2. Apply Newton's laws to dynamic and static force systems.			
3. Analyze work, power, and the conservation of mechanical energy.			
4. Examine the conservation of momentum in collisions.			
5. Solve problems involving static and dynamic fluids.			
6. Solve problems involving temperature, thermal energy and heat.			

STAT 201 - Statistics for Engineering Technology

You will gain knowledge of statistical concepts and techniques applicable to engineering technology. You will study descriptive statistics, probability distributions, the Central Limit Theorem, inferential statistics and linear regression. This course is intended to build problem solving and critical thinking skills, and to demonstrate the importance of statistics in professional practices.

Credit unit(s):	3.0
Prerequisites:	none
Corequisites:	none
Equivalent course(s):	MAT 233, STAT 120, STAT 200, STAT 220

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 statistical terminology and procedures.			
2. Apply measures of central tendency to technical problems.			
3. Apply measures of dispersion and the Central Limit Theorem to descriptive statistics.			
4. Examine basic probability.			
5. Examine probability distributions of random variables.			
6. Apply the Normal Probability Distribution and the Central Limit Theorem to inferential statistics.			
7. Apply confidence intervals and tests of hypothesis to technical problems.			
8. Analyze paired statistical data using simple linear regression.			

COOP 201 - Co-operative Work Term

Your second co-operative education term will build on the experience gained during your first work placement and provide you with additional opportunities to develop skills and techniques related to your field of studies in a real work setting.

Credit unit(s):   0.0
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. Participate in a personal employment search.			
2. Communicate effectively in the workplace.			
3. Contribute as a member of the team.			
4. Demonstrate effective work habits.			
5. Demonstrate safe work practices.			
6. Display personal management skills.			
7. Identify roles and responsibilities of personnel in the workplace.			
8. Apply learned skills and techniques in the workplace.			
9. Apply essential skills in the workplace.			

CAMP 204 - Environmental Field Work 2

You will participate in field exercises related to environmental assessment and characterization of terrestrial and aquatic environments including the sampling, monitoring, and analysis of air, soil, sediment, surface water, and groundwater. You will apply the results of your field exercises to the characterization and evaluation of contaminant pathways and potential or actual risk(s) to identified receptors. You will act as the safety coordinator for field activities.

Credit unit(s):	4.0
Prerequisites:	CAMP 104, ENVR 236
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 topographic surveying of groundwater monitoring well casings to determine inferred groundwater flow.			
2. Conduct low-flow groundwater sampling			
3. Interact with a terrestrial ecosystem in a prairie setting.			
4. Perform slug tests to determine groundwater hydraulic conductivity.			
5. Analyze parameters for common groundwater, surface water, soil, and air quality.			
6. Interpret laboratory analytical results of collected air, soil, water, and groundwater samples.			
7. Evaluate acquired data to characterize aquifer and aquatic environments.			
8. Manage safe work processes for a field activity.			

CAMP 205 - Boreal Field Work

You will participate in field activities within a boreal forest setting. You will become familiar with both the terrestrial and aquatic environments within the forest and be able to compare and contrast them to equivalent settings in a prairie landscape. You will also investigate an aquifer located in the sandy soils of a forest landscape, and explore the nutrient and energy flow of a boreal ecosystem.

Credit unit(s):	2.0
Prerequisites:	none
Corequisites:	CAMP 204
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. Interact with a terrestrial ecosystem within a boreal forest setting.			
2. Compare boreal wetlands to the wetlands previously explored in prairie landscapes.			
3. Value the importance of aquatic and terrestrial ecosystems to the traditions and the sustenance of First Nations Communities.			
4. Perform an aquifer test to determine aquifer properties.			
5. Discuss the flow of energy and nutrients in a boreal forest ecosystem.			

CHEM 201 - Environmental Chemistry

You will apply fundamental chemical principles acquired in previous courses, to environmental processes. You will study how to incorporate chemical principles in analyses of natural process as well as industrial and other anthropogenic impacts on air, water, and soil. You will also study how they apply to environmental monitoring, control and analysis.

Credit unit(s):	4.0
Prerequisites:	CHEM 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. Apply organic nomenclature to chemical structures.			
2. Apply chemical principles to industrial processes.			
3. Evaluate the thermodynamics of processes as applied to Earth's systems.			
4. Examine chemical principles to understand natural processes in air, soil, and water matrices.			
5. Examine chemical principles to understand pollution in air, soil, and water matrices.			
6. Evaluate the impacts of emissions from industrial processes from a life cycle and sustainability perspective.			

ENVR 200 - Atmospheric Environment

You will be introduced to the basics of meteorology with a focus on natural and anthropogenic air pollutants, and their properties, sources, and effects on the atmosphere. You will study how to set up meteorological and air monitoring equipment to test for atmospheric parameters and sample for the criteria air contaminants and other pollutants. The emphasis will be on the utilization of proper sampling protocols and procedures. The laboratory results will be compared to applicable federal and provincial ambient air quality regulations and objectives.

Credit unit(s):	4.0
Prerequisites:	ENVR 102
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. Compare the characteristics of the various layers of the atmosphere.			
2. Explain the differences between energy, temperature, and heat and how they influence the behaviour of the atmosphere.			
3. Identify the meteorological parameters associated with weather.			
4. Measure meteorological parameters using various meteorological instruments.			
5. Analyse meteorological data and assess the influence atmospheric conditions have on air quality.			
6. Identify the sources, causes, and health implications of natural and anthropogenic derived air pollution.			
7. Analyze for criteria air contaminants and other air pollutants using air monitoring equipment including the selection of proper monitoring requirements, standards, and methods.			
8. Evaluate air monitoring results against applicable federal and provincial ambient air quality regulations and objectives.			
9. Assess the mechanisms that give rise to climate change.			
10. Conduct a greenhouse gas emission survey to evaluate climate change impacts from the activity.			

ENVR 205 - Environmental Site Assessment 2

You will acquire the knowledge needed to plan, design, organize and implement the second phase of an Environmental Site Assessment (ESA). During the Phase II ESA, you will demonstrate field procedures for the investigation of areas of potential environmental concern (APECs). You will design a field investigation plan to locate, sample, identify and monitor the contaminants of concern.

Credit unit(s):   3.0
Prerequisites: ENVR 105, ENVR 236
Corequisites: CAMP 204
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. Identify the roles, responsibilities and limitations of Phase II Environmental Site Assessments (ESAs).			
2. Establish a Phase II ESA site investigation checklist.			
3. Design a site investigation plan for areas of potential environmental concern (APECs).			
4. Prepare a Project Management Plan (PMP) for the Phase II ESA site investigation.			
5. Conduct a Phase II ESA site investigation.			
6. Evaluate site specific information gathered to select appropriate environmental quality guidelines (EQGs) applicable to the subject site.			
7. Evaluate a contaminated site utilizing the Canadian Council of Ministers of the Environment (CCME) National Classification System for Contaminated Sites (NCSCS).			
8. Propose a Conceptual Site Model (CSM) containing contaminant sources, exposure pathways, and receptors.			
9. Compose a Phase II ESA report complete with NCSCS site score and CSM.			

ENVR 206 - Energy Resource Management

You will examine the major components of energy resource management including supply, demand, economics, regulation, and the environment. Your studies will include an examination of the regional, national, and global viewpoints on energy resource management. You will differentiate conventional and alternative energy systems and explore the concepts and principles behind successful energy management. A key outcome of this course will be the ability to estimate energy resource management economics including levelized costs, pay-back periods, and pollution mitigation costs. The course will prepare you to assess various energy resource management options given the current energy transition involving increasing energy demand within a carbon constrained future.

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. Identify the major components of an energy resource management system.			
2. Examine how the major components of energy resource management are interrelated.			
3. Differentiate between conventional and alternative energy systems.			
4. Examine energy demand, sourcing, and distribution on a regional, national, and global scale.			
5. Evaluate the influences of politics and economics on energy resource management.			
6. Evaluate the impacts of conventional and alternative energy sources from an environmental perspective.			
7. Examine the challenges and benefits of the energy resource management system transitions in a carbon constrained future.			
8. Examine energy resource management from the perspective of remote and/or Indigenous communities.			

ENVR 208 - Applied Ecology

You will study the ecology of aquatic and terrestrial ecosystems. You will be introduced to how populations grow and change and how this information is used to make management decisions. You will explore the impacts of humans on the environment.

Credit unit(s):	3.0
Prerequisites:	ENVR 103
Corequisites:	none
Equivalent course(s):	ENVR 235

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 biotic and abiotic components of aquatic environments.			
2. Evaluate a freshwater ecosystem in terms of its biotic quality.			
3. Relate an understanding of population ecology to decisions of wildlife managers.			
4. Examine human impacts on terrestrial and aquatic environments.			
5. Contrast the pros and cons of a variety of management practices utilized in terrestrial ecosystems.			
6. Discuss various survey methods used to assess and evaluate ecosystems.			
7. Consider the implications of developments on "Species at Risk".			

HYDO 202 - Hydrology

This course provides you an overview of hydrological processes, measurement techniques, and data analysis. You will study the movement of water in the hydrologic cycle via precipitation, interception, evapotranspiration, surface runoff, infiltration, soil moisture, groundwater flow and streamflow. Your studies will include applied aspects and local examples.

Credit unit(s):	3.0
Prerequisites:	MAT 110, PHYS 104
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. Identify the practical significance of the hydrologic cycle.			
2. Illustrate the unique properties associated with water and the effect of water on climate.			
3. Analyze how precipitation is measured and recorded for a given watershed.			
4. Analyze point precipitation in order to obtain mean precipitation values and intensities.			
5. Compute aerial precipitation using the Mean Precipitation, Theissen Polygon and Isohyetal Method.			
6. Determine various physical characteristics of watersheds using information from topographical maps.			
7. Describe the storage, movement, and supply of groundwater as well as factors which contribute to groundwater quality.			
8. Use unit hydrographs to predict design stream flows and appreciate flood control methods.			
9. Solve open channel flow problems.			

ENVR 203 - Liquid and Solid Waste Management

You will develop an understanding of the design basis of unit treatment processes and networks planning in municipal, industrial, and solid waste fields. Based on the skills you develop, you will design and plan a treatment facility in wastewater or solid waste landfill using best management practices. You will apply your skills in management and planning of domestic and industrial hazardous waste problems, impacts, and treatment/disposal.

Credit unit(s):	3.0
Prerequisites:	CHEM 200, HYDO 201, PHYS 104
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 the various environmental parameters contributing to municipal and industrial waste treatment and solid waste design.			
2. Assess a combination of treatment processes to fulfill treatment requirements.			
3. Design the appropriate wastewater treatment process for municipal, agricultural, and industrial uses.			
4. Design wastewater sewer networks and their components.			
5. Assess municipal and industrial solid waste management systems.			
6. Design an appropriate wastewater and/or solid waste management facility using applicable environmental regulations and guidelines.			

ENVR 207 - Remediation and Reclamation

You will plan, design, organize and propose different types of environmental remediation techniques using the results of your previous Phase I and Phase II Environmental Site Assessments (ESAs). You will use gathered information and knowledge in the application of remediation techniques including bioremediation, barrier systems, mechanized systems, and excavations.

Credit unit(s):	3.0
Prerequisites:	ENVR 205
Corequisites:	HYDO 200
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 the fundamentals of thorough and complete environmental site assessment.			
2. Compare the differences and similarities of remediation and reclamation.			
3. Examine remediation and reclamation from the perspective of remote and/or Indigenous communities.			
4. Apply applicable provincial remedial/reclamation criteria and guidelines to disturbed mining, oil and gas, and industrial sites.			
5. Examine the distinct types of remediation technology employed both in situ and ex situ.			
6. Examine the ways and means of Risk Based Closure (RBC) options.			
7. Develop a reclamation plan for a disturbed site.			
8. Prepare a Corrective Action Plan (CAP).			

ENVR 228 - Environmental Management

You will study the environmental project management elements of environmental liability, accountability, and due diligence in terms of risk assessment and risk management, Occupational Health and Safety, and emergency response planning. You will learn how to apply environmental management systems using the International Organization for Standardization (ISO 14000 series).

Credit unit(s):	3.0
Prerequisites:	ENVR 101
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. Identify the applicable environmental regulations and guidelines.			
2. Evaluate industry stewardship, accountability, and due diligence to minimize environmental liability.			
3. Evaluate Occupational Health and Safety (OH&S) program for compliance with OH&S Legislation.			
4. Design an effective corporate pollution prevention plan.			
5. Design an effective environmental management system.			
6. Evaluate emergency response planning.			

ENVR 229 - Environmental Impact Assessment

You will learn about the evolution of the environmental impact assessment process in Canada and in particular, Saskatchewan. The environmental impacts associated with various industry activities will be explored. The components of an Environmental Impact Statement will be reviewed. You will learn how to evaluate an area for environmental sensitivities and how to mitigate potential impacts of proposed activities. You will complete several exercises that will assist in the preparation of a preliminary environmental impact report or environmental protection plan.

Credit unit(s):   4.0
Prerequisites: ENVR 208
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 the environmental impact assessment (EIA) process.			
2. Conduct an inventory of resources for an EIA.			
3. Analyze available spatial data using land based (GIS) software.			
4. Assess potential environmental impacts of proposed activities.			
5. Design a preliminary mitigation plan.			
6. Evaluate processes for public consultation.			
7. Analyze the results of a preliminary EIA.			
8. Identify the challenges faced by First Nations communities as it relates to development and the importance of the "Duty to Consult" when developing environmental policies.			

HYDO 200 - Contaminant Hydrogeology

You will discuss the technical, theoretical and practical aspects of contaminant hydrogeology including sources of contamination, mechanisms of groundwater flow and contaminant transport. In addition, you will study modeling approaches and common field practices used to characterize groundwater parameters.

Credit unit(s):	3.0
Prerequisites:	HYDO 201
Corequisites:	ENVR 207
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. Characterize groundwater contamination.			
2. Differentiate transport and fate processes for solutes in groundwater.			
3. Solve solute transport by advection, diffusion, and dispersion.			
4. Solve 1D and 2D groundwater and contaminant flow scenarios.			
5. Examine sorption and retardation processes for solutes in groundwater.			
6. Examine multiphase flow and hydrocarbon recovery.			

MGMT 212 - Project Management

You will study project management theory, terms and concepts. You will study the project life cycle and discuss managing a successful project from pre-implementation to completion. You will be introduced to project management topics such as resources, costs, time constraints, project scope, and risk management. You will also prepare a bid package for a small project.

Credit unit(s):	4.0
Prerequisites:	MGMT 207
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 the importance of a project life cycle in project management.			
2. Discuss project initiation.			
3. Develop planning and scheduling elements in a project.			
4. Discuss an execution plan.			
5. Apply monitoring and control techniques.			
6. Examine project close-out.			
7. Discuss risk management.			
8. Discuss health, safety, and environment leadership in a project.			
9. Discuss stakeholder relations, negotiations, and dispute resolution.			
10. Prepare a tender package for a project.			
11. Use project management software to plan a project.			

PROJ 206 - Capstone Project

You will apply the engineering concepts and principles to develop a significant initiative or project. Working individually or in small groups, you will use interpersonal, problem solving, and project management skills to propose, conceptualize, design, and demonstrate an engineering project that is both significant and relevant to your field of practice. You will manage and schedule the project with minimal direction. You will develop a presentation appropriate for an industry client and demonstrate the communication skills necessary to defend the technical specifications and the relevance of project in relation to the initial engineering problem.

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. Propose a project and research the technical and design aspects required to complete the project.			
2. Manage scheduling to ensure timely completion of the project.			
3. Collect data required per the project proposal.			
4. Analyze the project and provide solutions to project design.			
5. Prepare a final report.			
6. Defend project conclusions in a technical presentation.			

TCOM 104 - Applied Research in Technology

You will develop a technical proposal and apply advanced research skills to a technical problem. You will use the technical problem-solving process in an applied research project and present your research findings in a written report and oral presentation.

Credit unit(s):	2.0
Prerequisites:	TCOM 103 or ENGL 101
Corequisites:	none
Equivalent course(s):	COMM 115, COMM 182, COMM 290, TCOM 239

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. Develop a technical proposal.			
2. Apply advanced research skills.			
3. Describe the technical problem-solving process.			
4. Employ the problem-solving process in an applied research project.			
5. Present research findings.			

COOP 301 – Co-operative Work Term

Your third co-operative education work term will round out the work term experience by adding related work knowledge through the application of theories and practices relevant to your field of studies.

Credit unit(s):   0.0
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. Demonstrate personal employment search skills.			
2. Display effective communication skills.			
3. Work as a member of the team.			
4. Apply effective work habits.			
5. Perform safe work practices.			
6. Master personal management skills.			
7. Understand roles and responsibilities of personnel in the workplace.			
8. Apply relevant theories and techniques.			
9. Perform effectively in the workplace.			