



Mining Engineering Technology - Diploma

PLAR Candidate Guide

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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](#)
- B. [PLAR eligibility and options](#)
- C. [Dates when PLAR assessment is available](#)
- D. [Special directions for this program](#)
- E. [PLAR contact person](#)
- F. [Self-rating course outlines](#)

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 be a registered student at Sask Polytech. Proof of English language proficiency may be required for some applicants. 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 (pre-requisite) or at the same time (co-requisite). See [course outlines](#) in this guide to identify any pre- or co-requisites for each course. Discuss with your [PLAR contact person](#) how to deal with courses with co-requisites.

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 assessment 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 the person below to arrange a consultation **after** you have read this guide and [general PLAR information](#) and rated yourself for each course (see next session). 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.

Danielle Faris, Program Head
Mining Engineering Technology - Diploma
Saskatchewan Polytechnic, Saskatoon Campus
Phone: 306 – 659 - 6900
Email: danielle.faris@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
Semester 1		
CADD 120	Computer Aided Drafting	
COMP 114	Microsoft Office for Engineering	
MAT 110	Mathematics for Engineering Technologies	Arts & Sciences
MINE 106	Mine Safety	
SEM 101	Technology Seminars	
SRVY 120	Surveying 1	
TCOM 102	Workplace Communication	Arts & Sciences
TERR 103	Terrain Evaluation	
Semester 2		
ENGM 100	Applied Mechanics	
GOEL 101	Mineralogy and Ore Deposits	
MAT 111	Calculus for Engineering Technologies	Arts & Sciences

COURSE CODE	COURSE NAME	Delivered by another department/program
MINE 109	Soils and Concrete	
MINE 111	Mining Methods 1	
SRVY 123	Surveying 2	
TCOM 103	Technical Communication	Arts & Sciences
Semester 3		
CAMP 105	Survey Camp	
CLTR 100	Diversity	
STAT 200	Statistics for Technology	
Semester 4		
FMEC 200	Fluid Mechanics	
FMEC 201	Fluid Mechanics Lab	
GRND 200	Introduction to Rock Mechanics and Ground Control	Arts & Sciences
GRND 202	Introduction to Rock Mechanics and Ground Control Lab	
MINE 201	Mining Methods 2	
MINE 202	Mining Hydrology	
MINE 203	Mine Blasting	
MVNT 200	Mine Ventilation	
PROJ 287	Project Management	
Semester 5		
ELEC 217	Basic Electricity	
GEOL 200	Geophysical Data Collection and Analysis	
GRND 201	Ground Control Design	
MINE 204	Mine Design and Planning	
MINE 205	Mine Ventilation Planning and Design	

COURSE CODE	COURSE NAME	Delivered by another department/program
MVNT 201	Mine Ventilation Planning and Design	
PROJ 206	Capstone Project	
SRVY 206	Underground Surveying	
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): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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.			

COMP 114 – Microsoft Office/Engineering

You will operate Microsoft Office software. You will apply functions in Excel, PowerPoint, and MS Project. You will demonstrate PowerPoint presentation skills.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Identify the elements of a spreadsheet environment.			
2. Employ data manipulation techniques in a spreadsheet.			
3. Analyze data in a spreadsheet.			
4. Apply functions in a spreadsheet.			
5. Construct a macro in a spreadsheet.			
6. Create a presentation in PowerPoint.			
7. Identify the elements of a MS Project environment.			
8. Practice functions in MS Project.			

MAT 110 – Math/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
Preequisitres: none
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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.			

MINE 106 - Mine Safety

You will develop an understanding of common safety systems as well as emergency procedures. Based on provincial and federal mine regulations, your studies will focus on mine safety topics including personal protective equipment and mine safety cultures.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Discuss different types of personal protective equipment and their uses in the mining industry.			
2. Discuss safety culture and its application.			
3. Discuss workplace hazards.			
4. Discuss health and safety aspects.			
5. Discuss safety in operating mine equipment.			
6. Discuss mine site emergencies.			
7. Discuss incident investigations.			
8. Discuss provincial and federal mine regulations.			

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): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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 103 - Terrain Evaluation

You will be introduced to physical geology beginning with the study of the origin, composition and characteristics of the major minerals and rock classifications. You will also study geologic processes and the landforms and geologic structures created by these processes. This class will provide you with an opportunity to study map reading and air photo interpretation.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Identify the geological features and formation of common rocks.			
2. Discuss the formation and physical characteristics of soil types.			
3. Describe the geological processes of mass wasting.			
4. Describe surface water and groundwater characteristics.			
5. Discuss various glacial landforms and their significance in terms of type of soil and origin.			
6. Describe desert formation and features.			
7. Discuss seismology.			
8. Describe the theory of plate tectonics.			
9. Identify various geologic and geomorphic features using air photos and a stereoscope.			
10. Interpret various types of maps.			

ENGM 100 - Applied Mechanics

You will learn the basic principles of statics. You will apply statics principles to solve various scenarios.

Credit unit(s): 3.0
Prerequisites: MAT 110
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Solve force vector problems.			
2. Solve statics problems involving forces and moments.			
3. Calculate the resultant of a system of forces.			
4. Analyze force systems using free body diagrams and the equations of static equilibrium.			
5. Analyze the forces acting on frames and machines.			
6. Calculate the center of gravity and centroid.			
7. Calculate the moment of inertia for various cross-sectional areas.			
8. Solve for unknown forces in frictional equilibrium problems.			

GEOL 101 - Mineralogy and Ore Deposits

You will examine physical and optical properties of minerals and rocks. You will study the processes of ore deposition and practice core logging. You will study mineral commodities.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Describe magma, volcanic eruptions, and formation of igneous rocks.			
2. Describe sediments and formation of sedimentary rocks.			
3. Describe metamorphism and formation of metamorphic rocks.			
4. Explain engineering geology.			
5. Describe ore deposit classifications.			
6. Discuss hydrothermal ore forming processes.			
7. Demonstrate core logging skills.			
8. Identify rocks and minerals.			
9. Examine mineral commodities on a national and global scale.			

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): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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.			

MINE 109 - Soils and Concrete

You will evaluate soil properties and discuss methods of ground improvement. You will discuss and practice methods of quality control in aggregate, concrete, grout, and shotcrete.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Discuss physical properties of soils.			
2. Describe the mechanical and hydraulic properties of soil.			
3. Demonstrate methods of measuring soil properties.			
4. Discuss methods of ground improvement.			
5. Evaluate compaction procedures for various soil types.			
6. Discuss chemical and physical properties of concrete, grout and shotcrete.			
7. Evaluate concrete batch to ensure it matches specific parameters.			
8. Discuss the importance of quality control when working with concrete.			
9. Demonstrate methods of checking quality control in concrete and aggregate.			
10. Explain methods of checking quality control in shotcrete and grout.			
11. Discuss methods of concrete inspection.			

MINE 111 – Mining Methods 1

You will become familiar with mining terminology, the mining cycle and mining history. When you complete the course, you will be able to describe different types of underground and surface mining techniques as well as basic mining equipment.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Describe mining history.			
2. Describe mining terminology.			
3. Explain the basic mining cycle.			
4. Explain different methods of mining.			
5. Identify basic types of mining equipment for surface and underground operation.			
6. Calculate grade and tonnage for surface and underground mining.			
7. Examine the role of mechanized haulage in the mining industry.			
8. Describe ore transportation by conveyor system and pipeline.			
9. Identify the components of various hoist systems.			
10. Discuss various mineral processing techniques.			
11. Discuss or storage and stockpile design.			

SRVY 123 - Surveying 2

You will focus on topographic surveys using Total Stations with data collection. You will be introduced to survey drawings and maps, contours, profiles and cross sections. You will complete calculations for construction surveys. You will be introduced to survey control using local grids, Universal Transverse Mercator (UTM) coordinate system and the Dominion Land Survey System.

Credit unit(s): 4.0
Prerequisites: MAT 110, SRVY 120
Corequisites: none
Equivalent course(s): none

Use a checkmark (P) 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.	Discuss city, provincial and federal guidelines for geometrical parameters of highway designs.			
2.	Discuss different types of curves associated with highways and mines.			
3.	Compute horizontal curves.			
4.	Practice horizontal curves.			
5.	Compute vertical curves.			
6.	Practice vertical curves.			
7.	Analyze the survey requirements for various construction surveys.			
8.	Practice electronic survey measurements with a Total Station and a remotely operated laser beam scanner.			
9.	Practice electronic survey measurements with Global Positioning System (GPS).			
10.	Review land survey systems in Canada.			

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, COM 170
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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.			

CAMP 105 - Survey Camp

Using the knowledge gained in previous surveying and computer aided drafting software courses, you will participate in surveying exercises and perform three projects in the field. In the first project, you will document, design and lay out a section of highway including a horizontal curve. In the second project you will collect closed traverse data and produce the drawing. In the third project, you will use the data collected using Global Positioning System (GPS) survey equipment in the field to produce a topographic map.

Credit unit(s): 4.0
Prerequisites: MAT 100, SRVY 123
Corequisites: none
Equivalent course(s): none

Use a checkmark (P) 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.	Employ safe practices while performing the survey field work.			
2.	Review use of survey instruments.			
3.	Perform horizontal and vertical control surveys along the straight section of highway.			
4.	Compute horizontal curve data for highway.			
5.	Perform horizontal and vertical control surveys along the circular section of highway.			
6.	Create AutoCAD drawings for highway sections.			
7.	Measure amount of cut and fill for highway sections.			
8.	Measure all sides and all internal angles of the selected closed traverse.			
9.	Create AutoCAD drawings for the closed traverse.			
10.	Collect topographic survey data using Global Positioning System (GPS) survey equipment.			
11.	Create topographic map using computer-aided drafting software.			
12.	Perform check and calculations to ensure data accuracy and integrity in surveying of highway, traverse, and topography.			

CLTR 100 - Diversity

You will examine the elements of cultural, gender and disability diversity in Canada and the processes that promote inclusion. You will explore elements of Indigenous culture with a view to understanding both historical elements and contemporary issues in Canada. Your studies will also provide opportunities to participate in various cultural practices.

Credit unit(s): 3.0
Pre and Co Requisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Examine the diverse Canadian identity.			
2. Describe diversity and social inequality in Canadian society.			
3. Examine the impact of colonization and treaties on Indigenous peoples.			
4. Examine contemporary realities and resilience of Indigenous people in Canada.			
5. Explore cultural events.			
6. Promote inclusion.			

STAT 200 – Statistics for Technology

You will gain knowledge of statistical concepts and techniques applicable to technologies. You will study descriptive statistics, measures of central tendency and dispersion, basic probability, the Central Limit Theorem, 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): 2.0
Prerequisites: none
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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. Analyze paired statistical data using simple linear regression.			

FMEC 200 - Fluid Mechanics

You will assess and utilize fluid properties. You will study static fluid, dynamic fluid and open channel flow. You will analyze pipe networks, classification and select of associated mechanical equipment and the principles of fluid flow measurement.

Credit unit(s): 4.0
Prerequisites: ENGM 100
Corequisites: FMEC 201
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Explain fundamental fluid property concepts, relationships and terminology.			
2. Examine the forces exerted on surfaces by static fluids.			
3. Calculate buoyancy forces on floating and submerged objects.			
4. Differentiate velocity, volume, weight and mass flow rate of fluids.			
5. Apply ideal conservation of energy principles to fluid flow systems.			
6. Examine energy gains and losses in fluid flow.			
7. Distinguish the type of fluid flow and associated energy losses.			
8. Calculate energy losses associated with pipe reticulation systems.			
9. Discuss series and parallel piping systems.			
10. Select a pump based on system characteristics and fluid properties.			
11. Discuss the principles and equipment for fluid measurement.			
12. Calculate the open channel flow parameters.			

FMEC 201 - Fluid Mechanics Lab

You will practice the fundamentals of fluid mechanics and fluids under static or dynamic conditions in closed conduits and open channels.

Credit unit(s): 1.0
Prerequisites: ENGM 100
Corequisites: FMEC 200
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Perform static fluid labs.			
2. Perform dynamic fluid labs.			
3. Perform open channel flow measurement.			

GRND 200 - Introduction to Rock Mechanics and Ground Control

You will study methods of ground control and support. You will collect geotechnical data for rock mass and classification systems. Using computer software, you will analyze stability concerns and joint set data.

Credit unit(s): 3.0
Prerequisites: ENGM 100
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Discuss differences between soft rock and hard rock.			
2. Collect geotechnical data for rock mass classification systems.			
3. Analyze stability concerns based on data.			
4. Analyze joint set data using computer software.			
5. Interpret how geological structure within a rock mass can control ground stability.			
6. Identify uses of rock bolts, cable bolts and accessories.			
7. Discuss challenges associated with ground movement and floor heaving.			
8. Discuss shotcrete as a ground control method.			

GRND 202 - Introduction to Rock Mechanics and Ground Control Lab

You will be introduced to procedures useful in rock mechanics design and utilize lab samples to conduct compressive strength on different type of samples.

Credit unit(s): 1.0
Prerequisites: ENGM 100
Corequisites: none
Equivalent course(s): none

Use a checkmark (P) 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. Map a simulated rock face using different compass.				
2. Estimate the height of a wedge using mathematical and numerical approach.				
3. Conduct a borehole camera survey for fracture orientation.				

MINE 201 - Mining Methods 2

You will apply engineering principles to determine appropriate mining methods and operating cycles for various orebodies in underground and surface mining. You will discuss equipment and infrastructures used in mining.

Credit unit(s): 4.0
Prerequisites: MINE 111
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Relate geology, geometry, and mining method.			
2. Select the suitable mining methods.			
3. Assess the operating cycle for underground and surface operations.			
4. Identify fundamental infrastructure requirements for underground and surface mines.			
5. Determine equipment required for different surface mining operations.			
6. Compare different surface mining methods.			
7. Analyze different underground mining methods.			
8. Determine equipment required for different underground mining operations.			
9. Compare different underground mining methods.			
10. Illustrate the effect of technological advancements on mining methods.			

MINE 202 - Mine Hydrology

You will be introduced to how water impacts mining operations; specifically, water treatment and water management. Your studies will include environmental issues pertaining to waste and tailings management as well as reclamation processes.

Credit unit(s): 3.0
Prerequisites: FMEC 200
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Discuss water sources for mining industries and risk associated with climate change and demand for water.			
2. Discuss water management between international and provincial borders.			
3. Discuss surface water hydrology and groundwater hydrology.			
4. Compute atmospheric parameters and soil properties associated with surface water runoff.			
5. Analyze surface water runoff in small and medium size watershed areas.			
6. Compute soil properties associated with groundwater aquifers.			
7. Analyze regional groundwater flows through various aquifers.			
8. Analyze seepage flow underneath water retaining structures.			

MINE 203 - Mine Blasting

You will study blasting safety, techniques, materials and related environmental issues. You will design blasting layouts for various underground and open pit mines.

Credit unit(s): 3.0
Prerequisites: MINE 111
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Identify blasting agents and supplies.			
2. Discuss environmental effects of mine blasting.			
3. Discuss provincial and federal regulations for mine blasting.			
4. Calculate blast parameters for surface and underground mine.			
5. Discuss blasthole drilling in mines.			
6. Design blasting layouts for surface mining.			
7. Design blasting layout for underground development.			
8. Design blasting layout for underground long-hole stope mining.			

MVNT 200 - Mine Ventilation

You will learn the basic theory and concepts of mine ventilation, mine environment and ventilation controls. You will apply ventilation formulas given specific factors. Your studies will include how to deal with confined space safety considerations.

Credit unit(s): 4.0
Prerequisites: MINE 111
Corequisites: FMEC 200
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Explain the properties and behavior of air.			
2. Describe airflow through mine openings and ducts.			
3. List components of a mine ventilation system.			
4. Explain the purpose of ventilation controls.			
5. Determine system efficiency performance and specification of requirements.			
6. Apply network analysis to ventilation systems.			
7. Apply network analysis to ventilation systems.			
8. Describe the relationship between radiation control and ventilation.			
9. Identify risks associated with ventilation management.			
10. Complete a mine ventilation survey.			
11. Discuss ventilation concerns associated with confined spaces.			
12. Review provincial and federal regulations associated with mine ventilation.			

PROJ 287 - Project Management

You will be introduced to project management. You will examine the basic theory of project planning and control, from project initiation to project close out. You will apply research techniques and various tools to practice project management theory in a variety of projects. You will practice skills using project management software.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Discuss project management concepts.			
2. Explain the process to initiate a project.			
3. Create a project plan using project management software.			
4. Explain the methods used to execute a project plan.			
5. Explain monitoring requirements of a project.			
6. Discuss closing requirements of a project.			

ELEC 217 - Basic Electricity

You will be introduced to the fundamentals of direct current (DC) and alternating current (AC) measurement, circuitry (including Ohm's Law, power and series and parallel circuits) and variable frequency drives (VFD's). A laboratory program is an integral part of this course.

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

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Analyze electrical circuits utilizing the three electrical properties of voltage, current and resistance.			
2. Identify the power and energy in an electrical circuit.			
3. Identify series circuits.			
4. Identify parallel circuits.			
5. Differentiate high voltage and multiphase scenarios.			
6. Describe variable frequency drives (VFD).			

GEOL 200 - Geophysical Data Collection and Analysis

You will be introduced to geophysics theory, data collection and analysis. You will compare various geophysical techniques.

Credit unit(s): 2.0
Prerequisites: EMGN 100, GEOL 101
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Identify physical properties of rocks.			
2. Compare different geophysical techniques.			
3. Demonstrate measurement of rock properties using various geophysical techniques.			
4. Discuss data interpretation methods.			
5. Explain the application of geophysical techniques in surface and underground setting.			
6. Solve for geophysical problems.			

GRND 201 - Ground Control Design

You will examine mine design using factor of safety, stability charts and other methods. You will examine mine operations and ground support systems.

Credit unit(s): 3.0
Prerequisites: GRND 200
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Analyze rock mass classification from stability charts.			
2. Analyze induced stresses in underground openings.			
3. Design a rock bolt and cable bolt installation for a given rock mass data.			
4. Observe a rock bolt pull test.			
5. Assess ground support designs.			
6. Calculate rock slope stabilities in surface mining applications.			
7. Analyze the slope stability of an open pit mine.			
8. Evaluate types of ground control instrumentation.			

MINE 204 - Mine Design and Planning

You will apply your knowledge of mining methods to design mine plans. Using computer software, you will develop and evaluate layouts for various mining methods. You will consider how economics and scheduling impacts your mining plan.

Credit unit(s): 4.0
Prerequisites: GRND 200, MINE 201
Corequisites: GRND 201
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Discuss the principles of mine planning.			
2. Discuss elements to consider when developing a mine plan.			
3. Discuss factors involved in a mine feasibility study.			
4. Explain factors considered when selecting a mining method for a particular ore body.			
5. Describe mining methods related to stresses in the ground structure and ground control.			
6. Design mine driving layouts for different mining methods.			
7. Analyze mine operations for different mining methods.			
8. Calculate the resources required for different mining methods.			
9. Compare different types of mine planning and scheduling software systems.			
10. Recognize economic, social, and environmental factors affecting mining cycle.			

MINE 205 - Mining Software

You will apply skills acquired in drafting and surveying courses to input data into Deswik and Vulcan software packages. You will construct 3D models of underground drift and ore body.

Credit unit(s): 3.0
Prerequisites: CADD 120
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Practice common tools and functions in software packages.			
2. Construct 3D models from 2D objects in software packages.			
3. Practice input of survey data in Deswik.			
4. Construct 3D models from survey data in Deswik.			
5. Construct a simple geological model of an ore body from a given test hole database in Vulcan.			
6. Practice input of survey data in Vulcan.			
7. Construct 3D model from survey data in Vulcan.			
8. Create a plan and section view of a planned mine layout in Vulcan.			
9. Analyze different underground mining software packages.			

MVNT 201 - Mine Ventilation Planning and Design

You will apply the theories and concepts of mine ventilation, mine environment and ventilation controls to mine ventilation problem solving and design. You will use ventilation software to validate these theories and concepts.

Credit unit(s): 3.0
Prerequisites: FMEC 200, MVNT 200
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Describe fan and ducting systems.			
2. Demonstrate fan curve usage.			
3. Illustrate how to represent ventilation on a mine plan.			
4. Discuss the importance of balancing airflows within a mine.			
5. Discuss the importance of balancing airflows within a mine.			
6. Solve for ventilation problems.			
7. Discuss variables to consider for mine ventilation setups.			
8. Assess dust control methods for a mine site.			
9. Discuss mine air heating and cooling system.			

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 (P) 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.	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.			

SRVY 206 - Underground Surveying

You will apply the concept of coordinate systems in an underground mine. You will learn the fundamentals of underground surveying skills with the use of survey equipment.

Credit unit(s): 4.0
Prerequisites: CAMP 105, SRVY 123
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	Competent	Learning	None
1. Explain the differences and challenges between underground and surface surveying.			
2. Practice standard survey techniques used in underground mine.			
3. Explain the process of transfer of elevation from surface to underground.			
4. Prepare driving layout of underground mine headings and developments.			
5. Analyze coordinate system.			
6. Describe cavity monitor survey (CMS) of stope and raise.			
7. Determine a position by resection in underground mine survey.			
8. Create underground development profile using Total Station and computer aided drafting software.			
9. Describe layout and survey of a drill-hole.			
10. Apply check survey principles.			
11. Practice surveying with a Multistation (MS60 Total Station).			
12. Describe the principles of drone and LiDAR survey.			

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, ENGL 101
Corequisites: none
Equivalent course(s): none

<p>Use a checkmark (P) to rate yourself as follows for each learning outcome</p> <p>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.</p>	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.			