



Power 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

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A. PLAR fees

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

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

B. PLAR eligibility and options

To be eligible for PLAR you must consult with the [PLAR contact person](#) and be approved for PLAR assessment.

Course prerequisites and corequisites

Some courses have one or more other courses that must be completed first (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. Please note, seeking PLAR credit for a course will impact the qualifying time credit required for Technical Safety Authority Saskatchewan certification, and this should be discussed during your consultation. Be prepared to provide your resume, course self-ratings (see [section F](#)), and a partially completed [PLAR application](#). If you are approved for PLAR, the contact person will sign your PLAR application and explain next steps.
4. Apply for admission to the program. See [directions](#) for applying.
5. **Register** for PLAR at [Registration/Enrolment Services](#) once you have signed approval on your [PLAR Application Form](#). The PLAR fee will be added to your student account.
6. **Finalize** an assessment plan with your assigned assessor.
7. **Complete** assessment before your PLAR registration expires.

E. PLAR contact person

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

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F. Self-rating course outlines

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

COURSE CODE	COURSE NAME	Delivered by another department/program
Semester 1		
COMP 172	Introduction to Microsoft Word and Excel	
ELEC 188	Basic Electricity 1	
ENGP 179	Applied Mechanics (Fourth Class)	
ENGP 180	Power Labs 1	
ENGP 181	Plant Maintenance 1	
MATH 299	Intermediate Algebra and Basic Trigonometry	
SFTY 172	Safety, Legislation and Codes	
TCOM 105	Communications for Technicians	Arts and Sciences
Year 1 - Semester 2		
ENGP 188	Plant Operation and Maintenance	
ENGP 192	Heating, Ventilation and Air Conditioning (HVAC)	
RFRG 195	Refrigeration (4 th Class)	
WORK 185	Work Experiences 1	

COURSE CODE	COURSE NAME	Delivered by another department/program
Year 2 – Semester 3		
CLTR 200	Culture and Diversity	Arts and Sciences
ELEC 291	Basic Electricity 2	
WORK 186	Work Experience 2	
Year 2 - Semester 4		
ENGP 280	Refrigeration and Plant Maintenance	
ENGP 298	Steam Generation (3 rd & 2 nd Class)	
WTER 283	Water Treatment (3 rd & 2 nd Class)	

COMP 172 - Introduction to Microsoft Word and Excel

You will learn the purpose and uses of a word processor and electronic spreadsheet. You will develop the basic skills of creating, editing and formatting documents and spreadsheets.

Credit unit(s): 1.0

Prerequisites: none

Corequisites: none

Equivalent course(s): COAP 120, COAP 172, COAP 381, COMP 120

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1. Create Word documents.				
2. Edit Word documents.				
3. Format Word documents.				
4. Create a spreadsheet.				
5. Use spreadsheet features.				

ELEC 188 - Basic Electricity 1

You will be introduced to the basics of alternating current (AC) and direct current (DC) circuits and machines. You will use electrical metering devices, perform electrical calculations as well as describe the operation of transformers and electrical distribution systems.

Credit unit(s): 2.0
Prerequisites: none
Corequisites: none
Equivalent course(s): PHYS 224

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Perform simple calculations using voltage, current, resistance and power.			
2.	Describe basic principles of magnetism.			
3.	Use electrical metering devices.			
4.	Describe operating principles of various types of alternating current (AC) and direct current (DC) motors and generators.			
5.	Describe operating principles of electrical transformers.			
6.	Describe an electrical distribution system.			

ELEC 179 – Applied Mechanics (Fourth Class)

You will solve many types of introductory problems related to the study of motion. You will learn about forces and applications of force such as work and pressure.

Credit unit(s): 2.0
Prerequisites: none
Corequisites: none
Equivalent course(s): PHYS 121

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1. Solve problems involving motion.				
2. Solve problems involving force.				
3. Solve problems involving work, energy and power.				
4. Solve problems involving moment of force and simple machines.				
5. Solve problems involving pressure and stress.				

ENGP 180 - Power Lab 1

You will learn the major components of a steam plant and participate in the operation of the equipment which is similar to that used in industry.

Credit unit(s): 3.0
Prerequisites: none
Corequisites: none
Equivalent course(s): PROP 182

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Identify power lab components and safety regulations.			
2.	Install manhole and hand hole covers.			
3.	Operate a plant air distribution system.			
4.	Operate raw and treated water systems.			
5.	Operate boiler feedwater pump.			
6.	Operate basic controllers.			
7.	Operate low pressure boiler and auxiliaries.			
8.	Operate high pressure boiler.			
9.	Test boiler interlocks.			
10.	Operate low and high pressure steam systems.			

ENGP 181 – Plant Maintenance

You will study piping, valves, materials and welding. You will use safe practices to perform maintenance tasks using common hand tools.

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	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.	Describe the safe use of common hand tools in the powerhouse.			
2.	Describe the mechanical properties of engineering materials.			
3.	Describe basic welding techniques.			
4.	Describe basic piping used in boilers and industrial plants.			
5.	Describe basic valves used in boiler and industrial plants.			
6.	Perform maintenance projects in shop environment.			

MATH 299 - Intermediate Algebra and Basic Trigonometry

You will use the principles of algebra, geometry, and trigonometry to solve basic problems in the power engineering field. You will apply these principles to practical problems involving percentages, ratio and proportion, mixtures, speeds, rates, practical problems involving simultaneous equations, and vectors.

Credit unit(s): 2.0
Prerequisites: none
Corequisites: none
Equivalent course(s): MAT 120, MAT 122, MATH 182, MATH 390, TSYH 120

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Use appropriate units.			
2.	Use algebra to simplify expressions.			
3.	Solve algebraic problems.			
4.	Calculate perimeter, area and volume.			
5.	Solve basic trigonometry problems.			
6.	Solve exponential and logarithmic equations.			

SFTY 172 - Safety, Legislation and Codes

You will study general safety information related to power engineering. You will study the basic principles of personal protective equipment (PPE), fire safety and WHMIS. You will study environmental pollutants and their methods of control. You will review the various provincial, Canadian and American Society of Mechanical Engineers (ASME) legislation and codes related to the construction and operation of boilers, pressure vessels and refrigeration plants.

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	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.	Describe general plant safety including common hazards and the PPE used.			
2.	Discuss common safety programs used in plants.			
3.	Describe safe storage and handling of dangerous materials.			
4.	Describe fire safety and extinguishing methods in the workplace.			
5.	Describe environmental pollutants and their methods of control.			
6.	Discuss safe work permits, incident reports and isolation techniques.			
7.	Describe the Power Engineer profession.			
8.	Describe the purpose of jurisdictional acts and regulations for power engineers.			
9.	Use the provincial Boiler and Pressure Vessel Act and Regulations, the Canadian Standards Association (CSA) B51 and ASME codes for the Construction and Inspection of Boilers and Pressure Vessels, the CSA B52 Mechanical Refrigeration Code and sections of the American Society of Mechanical Engineers (ASME).			

TCOM 105 - Communications for Technicians

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

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	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. Apply job-related communication strategies.				
2. Produce job-related written communication.				
3. Implement teamwork skills.				
4. Implement presentation skills.				
5. Use job search skills.				

ENGP 188 - Plant Operation and Maintenance

You will study the safe and efficient operational procedures for boilers and boiler systems. You will perform plant maintenance tasks including shaft alignment and rigging procedures.

Credit unit(s): 4.0
Prerequisites: ENGP 181
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Describe the safe and efficient boiler plant auxiliary equipment operational procedures.			
2.	Describe the safe and efficient operational procedures for starting and operating boilers and boiler systems.			
3.	Describe the operational checks required in a boiler plant.			
4.	Describe general shutdown and layup procedures for various boilers.			
5.	Describe readings required to be monitored and recorded in a plant.			
6.	Describe service and maintenance required for boilers.			
7.	Describe boiler cleaning and boiler inspection preparation procedures.			
8.	Perform shaft alignment and rigging procedures.			
9.	Perform plant maintenance tasks.			

ENGP 192 - Heating, Ventilation and Air Conditioning (HVAC)

You will be introduced to theory and equipment used in heating, ventilation, and air conditioning systems (HVAC). You will study heating, ventilation and air conditioning, humidification, duct design, lighting, water supply and sanitary drainage systems.

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	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Explain conditioning air for human comfort and health.			
2.	Describe operation and maintenance of steam and hot water heating systems.			
3.	Describe various heating, ventilation, and air conditioning systems and their control strategies.			
4.	Explain duct design and components used in HVAC systems.			
5.	Describe building lighting systems.			
6.	Describe building water supply and sanitary systems.			

RFRG 195 - Refrigeration (4th Class)

You will be introduced to the principles of refrigeration used in power plants including operation and maintenance procedures. Common refrigerants and their environmental effects will be reviewed. You will practice refrigeration calculations and become familiar with CSA B52, Mechanical Refrigeration Code.

Credit unit(s): 3.0
Prerequisites: THER 185
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.	Competent	
Learning:	I am still learning skills and knowledge to apply this outcome.	Learning	
None:	I have no knowledge or experience related to this outcome.	None	
1. Explain the basic concept of refrigeration and refrigerants.			
2. Perform basic refrigeration calculations.			
3. Describe the operating principles of compression refrigeration systems.			
4. Describe the purpose of operational and safety controls on refrigeration systems.			
5. Describe the maintenance of compression refrigeration systems.			
6. Describe the operating principles and maintenance of absorption refrigeration systems.			
7. Identify the potential hazards and preventative safety measures of refrigeration plants.			
8. Demonstrate the use of Canadian Standards Association (CSA) B52 and refrigeration tables.			

WORK 185 – Work Experience 1

You will have an opportunity to observe and participate in the operation at the plant site. You will investigate the impact of shift work on personal health and wellness. Your studies will be enhanced by real world experience. Your work experience will assist you in building networking opportunities within industry.

Credit unit(s): 0.0
Prerequisites: SFTY 172
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Communicate effectively in the workplace.			
2.	Demonstrate effective work habits.			
3.	Practice work safety.			
4.	Observe roles and responsibilities of personnel in the workplace.			
5.	Describe the plant equipment.			
6.	Describe the effects of shift work.			
7.	Collect information on shift work management.			

CLTR 200 - Culture and Diversity

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

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	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 how cultural dimensions shape the diversity of Canada.			
2.	Discuss the prominent dimensions of culture in Canadian society such as tradition, familial relations, and employment.			
3.	Describe the interrelationships produced when the dimensions of various cultures interact.			
4.	Describe the dimensions of culture as it relates to Indigenous and immigrant populations.			
5.	Discuss the correlation between culture, diversity, and innovation.			

ELEC 291 - Basic Electricity 2

You will study the operation of direct current (DC) and alternating current (AC) electrical generators motors and components used for the safe distribution of electrical energy. You will calculate DC and AC system operating values.

Credit unit(s): 2.0
Prerequisites: ELEC 188
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Explain the operating principles of DC generators and motors.			
2.	Explain the operating principles of AC generators, motors, and transformers.			
3.	Identify the components of typical AC systems.			
4.	Describe safety around electrical systems and equipment.			
5.	Solve calculations involving DC and AC power circuits.			
6.	Solve calculations involving AC power circuits.			

WORK 186 - Work Experience 2

You will have the opportunity to observe and participate in the operation of a steam plant. With this additional experience you will gain more insight into the different boilers and equipment. You will expand your work contact base during this work term.

Credit unit(s): 0.0
Prerequisites: WORK 185
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1. Display employability skills required for this level of plant.				
2. Work as a member of the shift team.				
3. Apply boiler related theory to the workplace.				
4. Perform routine 4th Class plant functions under supervision.				
5. Compare this plant operation to the previous plant experience.				

ENGP 280 - Refrigeration and Plant Maintenance

You will study industrial applications including multiple compressor arrangements, vapor compression, and absorption refrigeration. You will review auxiliaries, capacity controls and basic refrigeration calculations. You will study typical components of maintenance and administration programs for utilities and process facilities.

Credit unit(s): 1.0
Prerequisites: RFRG 195
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1. Explain refrigeration principles, systems, auxiliaries and operation.				
2. Explain typical communications, record keeping, and procedures.				
3. Describe maintenance management programs.				

ENGP 298 - Steam Generation (3rd & 2nd Class)

You will study various types of steam generators. You will study boiler construction, operating procedures, firing equipment and control systems. You will study inspection methods required for safe pressure vessel operation. You will study how large centrifugal pumps are installed and operated for various boiler designs.

Credit unit(s): 3.0
Prerequisites: ENGP 190, ENGP 191
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Discuss various steam generator designs, burners and other internal components.			
2.	Describe special boiler designs, their assembly and maintenance requirements.			
3.	Explain boiler heat transfer components and the various temperature zones in a boiler.			
4.	Describe boiler operation, control, draft, and gas equipment and procedures for maintenance and inspection.			
5.	Explain pressure vessel design, stresses, and operating considerations.			
6.	Discuss the selection, installation and operation of centrifugal pumps.			

WTER 283 - Water Treatment (3rd & 2nd Class)

You will learn about the need for and the methods used to treat water in large power plants, internally and externally. You will learn to use instruments to detect problems, take samples, and measure chemical levels. You will study treatment and testing methods for cooling water, industrial wastewater treatment, and potable water.

Credit unit(s): 3.0
Prerequisites: WTER 182
Corequisites: none
Equivalent course(s): none

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	Learning	None
Competent:	I can apply this outcome without direction or supervision.			
Learning:	I am still learning skills and knowledge to apply this outcome.			
None:	I have no knowledge or experience related to this outcome.			
1.	Discuss the significance of common water impurities and the application of water analyses.			
2.	Describe water pre-treatment processes for removal of oil, gases, and suspended solids.			
3.	Describe water pre-treatment processes for ion removal.			
4.	Describe boiler internal water treatment processes including testing methods.			
5.	Describe wastewater treatment.			
6.	Discuss water treatment applications for cooling water, and potable water.			