



Refrigeration and Air Conditioning Certificate

PLAR Candidate Guide

Prior Learning Assessment and Recognition (PLAR)

Copyright

No part of the work(s) contained herein may be reproduced or copied in any form or by any means – graphic, electronic, or mechanical, including photocopying, recording, taping of information and retrieval systems – without written consent of Saskatchewan Polytechnic.

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 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.

Lee Blakely, Program Head
Saskatchewan Polytechnic, Saskatoon Campus
Phone: 306 – 659 - 4606
Email: blakely@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		
COMM 127	Fundamental Communication Skills	Arts & Sciences
ELEC 138	Basic Electricity 1	
MATH 199	Mathematics	
METL 181	Soldering and Brazing	
PIPE 182	Basic Piping Techniques	
RFRG 106	Accessories, Head Pressure Control and Refrigerants	
RFRG 107	Fundamentals of Refrigeration	
RFRG 184	Basic Refrigeration System Components and Capacity Control	
RFRG 191	Basic System Installation	
TOOL 188	Basic Hand Tools	
WLDR 179	Welding	

COURSE CODE	COURSE NAME	Delivered by another department/program
Semester 2		
ELEC 139	Basic Electricity 2	
GRPH 181	Graphics	
HVAC 102	HVAC Basics	
INDG 100	Introduction to Indigenous Studies	Arts & Sciences
RFRG 108	Electrical	
RFRG 109	Motors and Defrost Systems	
RFRG 192	System Design and operation	
RFRG 193	System Design and Installation	
SAFE 114	Safety and Electrical Control Systems	
WORK 114	Work Experience	

COMM 127 - Fundamental Communication Skills

You will use fundamental employability skills related to obtaining and keeping a job. You will apply skills to work effectively with others and produce job-related documents. You will identify employability and practical skills to prepare effective job search materials and discuss the effect of attitudes and behaviours on a successful job search.

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

<p>Use a checkmark (✓) 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. Apply job-related interpersonal communication strategies.			
2. Examine effective digital communication.			
3. Prepare job-related written communication.			
4. Use job search skills.			

ELEC 138 - Basic Electricity 1

You will study the fundamentals of electricity. The course content includes an introduction to basic electrical quantities, basic electric circuits, and circuit analysis. You will receive hands-on instruction regarding the use of multimeters. You will perform experiments to reinforce the fundamentals of electricity and use multimeters to evaluate the characteristics of basic direct current (DC) and alternating current (AC) circuits.

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

<p>Use a checkmark (✓) 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 electricity and electrical quantities.			
2. Discuss the characteristics of various meters.			
3. Measure electrical quantities with multimeters.			
4. Interpret schematic diagrams.			
5. Assemble basic circuits from schematic diagrams.			
6. Solve problems using Ohm's and Watt's Laws.			
7. Interpret simple series, parallel and combination resistive circuits.			
8. Describe basic switches and switch circuits.			
9. Describe electrical hazards and electrical safety devices.			

MATH 199 - Mathematics

You will review basic mathematics and the metric system of measurement. The course content includes percent, ratio, proportion, area, volume, and equations. You will then focus on the applications of mathematics in the trade that include electrical, pressure, pneumatics, and elementary thermodynamics calculations.

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

<p>Use a checkmark (✓) 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. Use basic mathematics.			
2. Use metric units.			
3. Use basic algebra.			
4. Use basic geometry and trigonometry.			
5. Perform basic trade calculations.			
6. Perform advanced trade calculations.			

METL 181 - Soldering and Brazing

You will learn soldering and brazing techniques as well as proper use of acetylene equipment. You will also learn how to work with the metals used in refrigeration and air conditioning.

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Examine metals used in refrigeration piping and components.			
3. Select soldering and brazing materials.			
4. Use soldering and brazing equipment.			

PIPE 182 - Basic Piping Techniques

You will learn basic hand skills and the techniques used for piping and pipe joining. Your training will focus on cutting, reaming, swaging, flaring, and bending techniques.

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Recognize copper tubing, piping, and fittings.			
3. Perform installation procedures using copper tubing.			

RFRG 106 - Accessories, Head Pressure Control and Refrigerants

You will also learn the operation of different types of flow controls, accessories, and basic cycling controls. You will also learn how to install and calibrate these components. You will learn about different types of refrigerants, refrigerant characteristics, environmental regulations and receive Canada's Ozone Layer Protection Awareness training.

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

<p>Use a checkmark (✓) 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 refrigerant system accessories.			
2. Identify refrigerant flow controls.			
3. Design refrigeration piping systems.			
4. Select refrigerants and oils.			
5. Apply refrigerant safety practices.			
6. Choose acceptable refrigerant service techniques.			

RRFG 107 - Fundamentals of Refrigeration

You will study temperature and temperature measurement, pressure, and pressure measurement as well as heat and heat transfer. You will also study heat transfer in the basic cycle, pressure temperature relationships, the refrigerant condition in the system components and the basic cycle components.

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

<p>Use a checkmark (✓) 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 trade terminology.			
2. Compare temperature and temperature measurement.			
3. Compare pressure and pressure measurement.			
4. Identify types of heat and heat transfer.			
5. Explain change of state of a substance.			
6. Compare types of latent heat.			
7. Sketch a basic cycle diagram.			
8. Describe refrigerant condition in each component.			
9. Explain the function of each system component.			
10. Solve refrigeration system problems.			

RFRG 184 - Basic Refrigeration System Components and Capacity Control

You will study the operation and design of compressors, condensers, evaporators, and metering devices. You will examine the different methods used for controlling capacity on refrigeration systems.

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

<p>Use a checkmark (✓) 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 purpose and operation of compressors.			
2. Explain the purpose and operation of an evaporator.			
3. Compare metering devices.			
4. Explain the purpose and operation of a condenser.			
5. Compare capacity control methods.			

RFRG 191 - Basic System Installation

You will set up a small commercial refrigeration unit and perform all installation and service procedures required to have a completed operating system.

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Plan a refrigeration system.			
3. Sketch a refrigeration system.			
4. Design a control system.			
5. Assemble a refrigeration system on a backboard.			
6. Conduct system analysis.			
7. Manage job related documents.			

TOOL 188 - Basic Hand Tools

You will study threaded fastener systems and practice the use of hand tools most commonly used in metalwork applications in the refrigeration trade.

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

<p>Use a checkmark (✓) 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. Use measuring and hand tools.			
2. Use power tools.			
3. Identify fasteners.			

WLDR 179 - Welding

You will learn how to safely operate, assemble, and maintain an oxy-fuel system while torch brazing (TB) and oxy-fuel cutting (OFC).

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Describe the safe operation, assembly, and maintenance of an oxy-fuel system.			
3. Demonstrate the safe operation, assembly, and maintenance when torch brazing.			
4. Demonstrate the safe operation, assembly and maintenance when oxy-fuel cutting on gauge metal and plate.			

ELEC 139 - Basic Electricity 2

You will learn the operating principles of transformers, relays, generators, single and three-phase alternating current (AC) motors. You will construct and analyze rectifier and relay control circuits. You will analyze the operation of transformers and test the performance of a variety of AC motors. You will construct and troubleshoot common motor control circuits.

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Describe the principles of magnetism, electromagnetism, and power generation.			
3. Analyze the operation of transformers.			
4. Describe relays and relay control circuits.			
5. Discuss inductance, capacitance, and power factor correction.			
6. Analyze rectifier circuits.			
7. Analyze the operation, trouble shooting, and drawings of various AC motors and circuits.			
8. Discuss various circuit and motor protection methods and devices.			
9. Analyze a variety of motor control circuits.			

GRPH 181 - Graphics

You will develop suitable drafting and blueprint interpreting skills. You will learn how to read blueprints and produce shop drawings as needed in the trade. You will also learn how to take estimates from these drawings.

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

<p>Use a checkmark (✓) 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. Use drafting equipment.			
2. Sketch a 2-dimensional object.			
3. Sketch isometric and oblique drawings.			
4. Sketch orthographic drawings.			
5. Use scales to reduce and enlarge drawings.			
6. Use basic dimensioning.			
7. Interpret basic blueprints.			
8. Find location, orientation, and size for any feature.			
9. Prepare detail working assembly drawings.			

HVAC 102 - HVAC Basics

You will learn the fundamentals of air conditioning and types of air conditioning systems. You will also receive introductory level training on HVAC electrical systems, controls, and air handlers.

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

<p>Use a checkmark (✓) 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 air properties.			
2. Compare air conditioning systems.			
3. Examine HVAC controls.			
4. Interpret air flow problems.			

INDG 100 - Introduction to Indigenous Studies

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

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

<p>Use a checkmark (✓) 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 Indigenous nations of Saskatchewan.			
2. Explain how colonization has impacted Indigenous peoples.			
3. Discuss current issues and possible solutions.			

RFRG 108 - Electrical

You will learn how to use electrical symbols, schematic diagrams, and electrical test meters as well as design diagrams and learn troubleshooting techniques. You will also examine common electrical components.

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 electrical components.			
2. Interpret wiring diagrams.			
3. Design electrical circuits.			
4. Apply troubleshooting techniques.			

RFRG 109 - Motors and Defrost Systems

You will receive training on motors and motor-starting and protection devices. You will learn about defrost methods, defrost control, and defrost wiring.

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

<p>Use a checkmark (✓) 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 motor types.			
2. Examine motor starting devices.			
3. Examine motor protection devices.			
4. Conduct motor tests.			
5. Compare defrost methods.			
6. Interpret defrost electrical systems.			
7. Design defrost electrical systems.			
8. Design piping arrangements.			

RFRG 192 - System Design and Operation

You will install an air cooled system on an insulated fixture and design this project in phases to learn variations in electrical and control systems. You will also develop troubleshooting skills by diagnosing typical system malfunctions.

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Plan a refrigeration system.			
3. Sketch a refrigeration system.			
4. Construct refrigerated fixture.			
5. Design a control system.			
6. Set up system controls.			
7. Manage system problems.			
8. Troubleshoot system problems.			
9. Repair system problems.			

RFRG 193 - System Design and Installation

You will design and install a low temperature unit using an air cooled unit and refrigerated fixture. You will also design and install the control system including defrost timer, defrost termination, fan delay, defrost heaters, evaporator fans and the condensing unit.

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

<p>Use a checkmark (✓) 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 safety hazards.			
2. Plan a low temperature refrigeration system.			
3. Sketch a refrigeration system.			
4. Construct a low temperate refrigeration fixture.			
5. Design a low temperature control system.			
6. Set up low temperature system controls.			
7. Troubleshoot low temperature system problems.			
8. Repair low temperature system problems.			

SAFE 114 - Safety and Electrical Control Systems

You will learn about the hazards associated with the refrigeration and air conditioning trade. You will also learn safe working practices and receive Workplace Hazardous Materials Information System (WHMIS) training. You will also learn the design and assembly of typical electrical systems used on refrigeration & air conditioning equipment. You will select and apply troubleshooting and diagnostic techniques for motors and electrical components.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome		Competent	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 safe work practices.			
2.	Discuss WHMIS.			
3.	Demonstrate safe work practices.			
4.	Demonstrate knowledge of access equipment, their applications, maintenance, and procedures as per regulations.			
5.	Demonstrate knowledge of rigging, hoisting, and lifting equipment, their applications, communication methods, as well as maintenance and procedures for use as per regulations.			
6.	Design electrical systems.			
7.	Select troubleshooting procedure.			
8.	Solve electrical problems.			

WORK 114 - Work Experience

You will participate in a work placement to further your understanding of industry requirements. Your training will be provided by a journeyperson.

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

<p>Use a checkmark (✓) 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 industry requirements.			
2. Demonstrate technical skills.			