

Machinist Certificate

PLAR Candidate Guide

Prior Learning Assessment and
Recognition (PLAR)



Tomorrow
in the making.

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Saskatchewan Polytechnic

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The Machinist Certificate program is dedicated to removing barriers and broadening the access to programs at Saskatchewan Polytechnic. We believe that adults acquire knowledge and skills through life and work experience that may align with courses within our programs.

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Why consider a PLAR assessment?

PLAR refers to the combination of flexible ways of evaluating people's lifelong learning, both formal and informal against a set of established standards. You can receive academic credit for your relevant lifelong learning. The Machinist program recognizes prior learning in a number of ways.

We recognize:

- Previous formal learning from an accredited training institution through transfer of credit.
- Previous informal learning or experiential learning through a comprehensive prior learning and recognition process.

What are the PLAR options?

To be eligible for PLAR, an applicant must first register or already be registered as a Saskatchewan Polytechnic student.

Option A: Individual course challenge

If you have recent successful experience in the machine shop field, and have learned the skills and knowledge for **one or more** of the Machinist courses, you may apply to be assessed for each applicable course.

Fees:

- There will be a charge for each individual course assessment.
- For a listing of the specific PLAR fees, check the [PLAR database](#) or call Saskatchewan Polytechnic and ask to speak to the PLAR advisor/counsellor assigned to the Machinist program at: 1-866-467-4278.

How many courses can be challenged through PLAR in the Machinist program?

Currently we have 14 out of 17 certificate courses with PLAR challenges available. There is no limit. You may challenge as many of these courses as you are able to prove prior skills and knowledge through assessment.

Which courses are PLAR-ready?

Machinist Certificate Program Profile			
COURSE CODE	COURSE NAME	PLAR Challenge(s) available through program	PLAR Challenge(s) not available
BESK 100	Benchwork	✓	
COMM 106	Applied Communications	✓ *See Note Below	
DRAW 100	Technical Drawing		X*
EMPS 102	Work Environment Skills		X
MACH 100	Computer Numerical Control	✓	
MACH 101	Drilling Machine Operations	✓	
MACH 102	Grinding Operations	✓	
MACH 103	Lathe Operations	✓	
MACH 104	Milling Machine Operations	✓	
MACH 105	Sawing Operations	✓	
MATE 100	Materials Selection	✓	
MATH 104	Applied Mathematics	✓*	
MEAS 100	Precision Measurement	✓	
PRNT 100	Blueprint Reading	✓	
THER 100	Heat Treatment Process	✓	
WELD 102	Welding Operations		X*
WORK 100	Industrial Attachment	✓	

Note: Some courses common to multiple programs at Saskatchewan Polytechnic (i.e. computers, communications, math, and sciences) are managed by associated studies faculty. To see if these shared courses in your program are PLAR-ready, visit the "Courses Common to Multiple Programs" link on the [PLAR homepage](#) for further details.

For assistance call Saskatchewan Polytechnic and ask to speak to the PLAR advisor/counsellor assigned to the Machinist program at: 1-866-467-4278.

Is PLAR available at any time of the year?

PLAR challenges are currently being offered at any time during the academic year.

Is it *easier* to challenge a course through PLAR or take the course?

Neither is easier. By using PLAR you may reduce the repetition of studying information that you already know. The PLAR process allows you to demonstrate knowledge you already have.

PLAR is not an easy way to certification, rather a “different” way to obtain certification. Your personal level of skill and experience will dictate which courses you choose to challenge. The self-audit section found later in this guide will help you decide if you have a good match of skill and knowledge for a specific course.

Methods of assessing prior learning

Assessment methods measure an individual’s learning against course learning outcomes. The assessment methods listed below are the ones most commonly used, but other forms of flexible assessment may be considered. These assessments may include one or a combination of the following assessment tools:

- product validation & assessment
- challenge exam
- performance evaluations (including skill demonstrations, role plays, clinical applications, case studies)
- interviews and oral exams
- equivalency (evaluations of learning from non-credit training providers)
- evidence or personal documentation files (providing evidence of learning from life and work experiences and accomplishments)

If I live out of town, do I have to travel to a main campus to do PLAR?

There will be times that you will need to meet with the program on campus. However, we will try to keep travel to a minimum.

What if I have a disability & need equity accommodations?

At Saskatchewan Polytechnic, we understand that sometimes services must be provided to students in a variety of ways to achieve the goals of fair representation. Therefore, the range of services provided for Education Equity students is as diverse as the needs of those students. We strive for equity (not uniformity) and provide varied services for students with differing needs. If more information is required, please contact a Saskatchewan Polytechnic counsellor at a campus closest to you or refer to the Saskatchewan Polytechnic website:

<http://saskpolytech.ca/student-services/support/counselling-services.aspx>

Are there other methods to gain Saskatchewan Polytechnic course credits for prior learning?

Transfer Credit

Yes, Saskatchewan Polytechnic will grant credit for previous training that is similar in content, objectives, and evaluation standards to Saskatchewan Polytechnic training. Transfer of credit is different from the PLAR process. Transfer Credit guidelines may be found at:

<http://saskpolytech.ca/admissions/resources/transfer-credit.aspx>

It is the student's responsibility to check with Registration Services for specific campus procedures on this policy. For specific information and guidelines regarding transfer of credit, contact a [Saskatchewan Polytechnic educational counsellor](#).

Equivalency Credit

Equivalency credit refers to the application of credit you may have earned in a previously taken Saskatchewan Polytechnic course to your current Saskatchewan Polytechnic course. Apply at registration services for *equivalency credit*. This process should also be completed prior to your PLAR challenge. If these credits cannot be used for *equivalency credit*, you may use these accredited courses as part of your evidence for your PLAR challenge.

Contact us

If more information is required, please contact a designated PLAR counsellor at a campus closest to you.

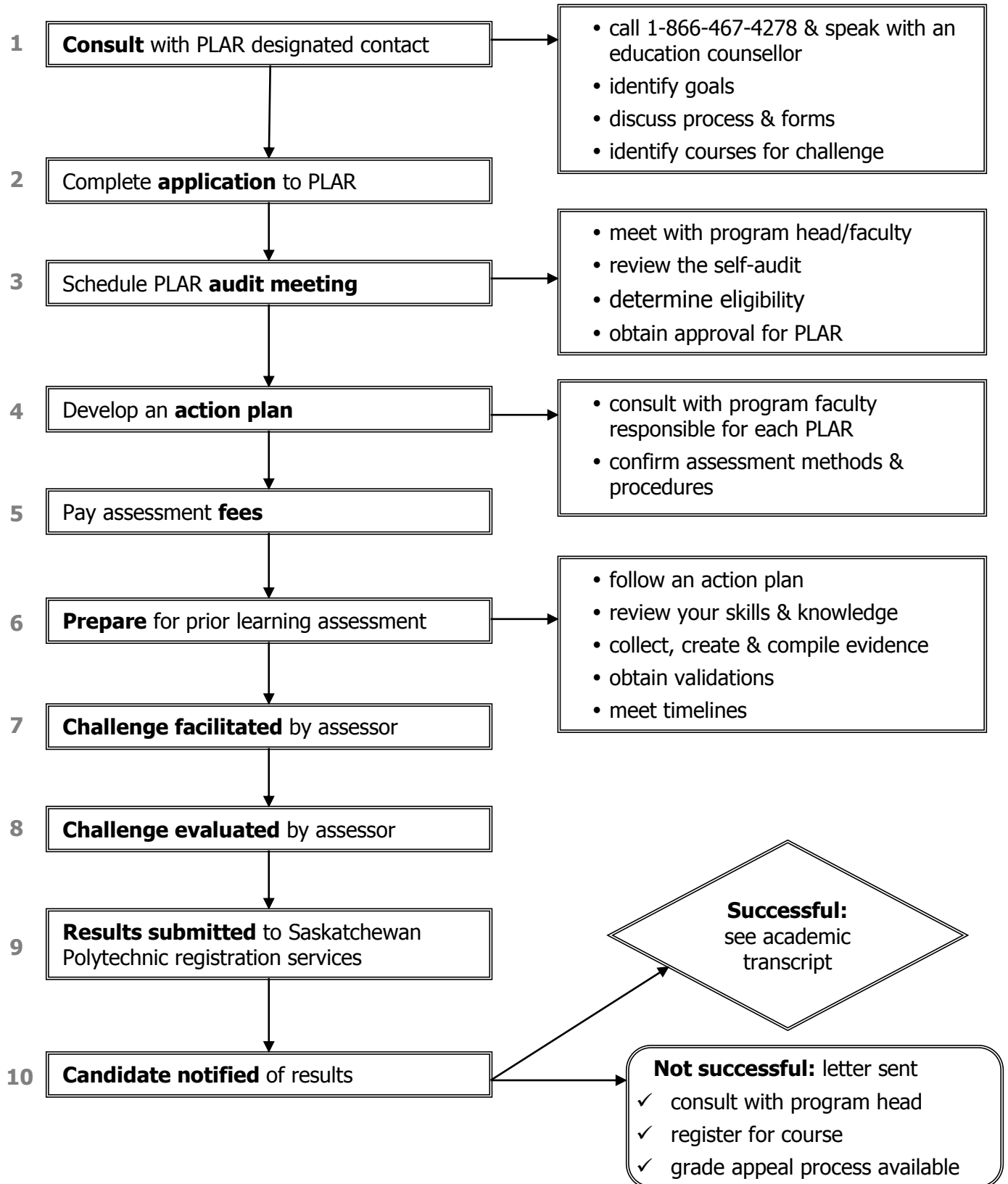
Saskatchewan Polytechnic in Moose Jaw
Counselling Services, Room 2.203
306-691-8311 or 306-691-8310
pallisercounselling@saskpolytech.ca

Saskatchewan Polytechnic in Prince Albert
Counselling Services, Room F203 (Technical Centre)
306-765-1611
woodlandcounselling@saskpolytech.ca

Saskatchewan Polytechnic in Regina
Counselling Services, Room 228
306-775-7436
[wascanacounselling@saskpolytech.ca](mailto:waskanacounselling@saskpolytech.ca)

Saskatchewan Polytechnic in Saskatoon
Counselling Services, Room 114
306-659-4050
kelseycounselling@saskpolytech.ca

Prior Learning Assessment and Recognition process



Guiding principles for developing a PLAR evidence file

1. As you begin the PLAR process you will be advised if any evidence is required. This will be identified in your [action plan](#). Check with the PLAR designated contact **before** you begin to gather evidence.
2. Evidence must be valid and relevant. Your evidence must match the learning outcomes identified for each course.
 - It is your responsibility to create, collect and compile relevant evidence – if required.
3. Learning must be current.
4. The evidence should demonstrate the skills and knowledge from your experiences.
5. The learning must have both a theoretical and practical component.

Types of evidence

There are three types of evidence used to support your PLAR request:

1. Direct evidence – what you can demonstrate for yourself.
2. Indirect evidence – what others say or observe about you.
3. Self-evidence – what you say about your knowledge and experience.

Ensure that you provide full evidence to your Machinist faculty assessor so that your prior learning application is assessed appropriately. Well organized, easy to track evidence will also ensure that none of the evidence is missed or assessed incorrectly.

Here are some examples of evidence that you may be requested to submit as part of your evidence file (if required):

- workplace validations
- work samples

All documents that are submitted to Saskatchewan Polytechnic may be returned to the student after the final results have been given and the grade appeal deadline of seven days has passed. A copy of transcripts and certificates may be included in your evidence file, but be prepared to show original documents at the PLAR audit meeting for validation.

How long will it take to prepare evidence for PLAR?

Since the requirements are different for each course, and each candidate has different experiences, the amount of time it takes to prepare your evidence will vary.

Steps to complete a self-audit

1. Read through the levels of competence as listed below.

Mastery:	I am able to demonstrate the learning outcome well enough to teach it to someone else.
Competent:	I can work independently to apply the learning outcome.
Functional:	I need some assistance in using the outcome.
Learning:	I am developing skills and knowledge for this area.
None:	I have no experience with the outcome.

Learning outcomes

For each learning outcome listed, please self-evaluate your competency levels and record in the appropriate column for each self-audit.

2. Take a few minutes and read through the following self-audit for each course you are interested in as a PLAR candidate.
3. Check your level of competence as you read through each of the learning outcomes for each course. The information will help you in your decision to continue with your PLAR application.
4. In order to be successful in a PLAR assessment, your abilities must be at the competent or mastery level for the majority of the learning outcomes. Some things to consider when determining your level of competence are:
 - How do I currently use this outcome?
 - What previous training have I had in this outcome: workshops, courses, on-the-job?
 - What personal development or volunteer experience do I have in this area?

Be prepared to explain the reason you chose this level if asked by an assessor.

5. Bring the completed self-audit to a consultation meeting with the program head or faculty member in [step 3 – PLAR process](#) of the candidate process for prior learning assessment.

Self-audit guide(s)

BESK 100 – Benchwork

You will perform operations using hand power tools and hand cutting tools in order to layout, file, thread and fit assemblies together.

Credit unit(s): 8.0

BESK 100 - Benchwork Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Use hand tools.					
▪ Identify the use and care of vises					
▪ Identify mechanical hardware					
▪ Select hand tools					
▪ Use hand tools					
2. Use basic semi-precision layout tools.					
▪ Identify layout tools and their uses					
▪ Prepare workpiece for layout					
▪ Layout a project within the specified tolerances					
3. Perform precision layout.					
▪ Identify precision layout tools					
▪ Use vernier height gauge					
▪ Use sine bar and gauge blocks					
▪ Calculate hole spacings					
▪ Perform basic precision layout					
4. Sharpen twist drill.					
• Identify various features, sizes and angles of twist drills					
• Hand sharpen twist drills					
5. Use power tools.					
▪ Maintain pedestal grinder					
▪ Use pedestal grinder					
▪ Identify hand-held power tools and their uses					

BESK 100 - Benchwork Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
<ul style="list-style-type: none"> ▪ Use hand-held power tools 					
6. Select metals.					
<ul style="list-style-type: none"> ▪ Identify common metal shapes 					
<ul style="list-style-type: none"> ▪ Measure common metal shapes 					
<ul style="list-style-type: none"> ▪ Select metals for job applications 					
7. Apply cutting fluids.					
<ul style="list-style-type: none"> ▪ Identify types of cutting fluids 					
<ul style="list-style-type: none"> ▪ Select cutting fluids 					
<ul style="list-style-type: none"> ▪ Apply cutting fluids 					
8. Use metal cutting hand tools.					
<ul style="list-style-type: none"> ▪ Select files 					
<ul style="list-style-type: none"> ▪ Use files 					
<ul style="list-style-type: none"> ▪ Use hand hacksaws 					
<ul style="list-style-type: none"> ▪ Use chisels 					
<ul style="list-style-type: none"> ▪ Use metal snips 					
9. Perform hand threading operations.					
<ul style="list-style-type: none"> ▪ Select taps 					
<ul style="list-style-type: none"> ▪ Calculate the tap drill sizes for inch and metric taps 					
<ul style="list-style-type: none"> ▪ Use taps 					
<ul style="list-style-type: none"> ▪ Identify thread cutting dies 					
<ul style="list-style-type: none"> ▪ Use thread cutting dies 					
10. Perform internal keyseating operations.					
<ul style="list-style-type: none"> ▪ Identify broaches and their uses 					
<ul style="list-style-type: none"> ▪ Identify keyseater parts and functions 					
<ul style="list-style-type: none"> ▪ Select cutting tools and work holding devices 					
<ul style="list-style-type: none"> ▪ Cut a keyway in a workpiece 					
11. Operate presses and pullers.					

BESK 100 - Benchwork					
Mastery: I am able to demonstrate it well enough to teach it to someone else.	Mastery	Competent	Functional	Learning	None
Competent: I can work independently to apply the outcome.					
Functional: I need some assistance in using the outcome.					
Learning: I am developing skills and knowledge for this area.					
None: I have no experience with the outcome.					
▪ Identify types and uses of presses and pullers					
▪ Identify safety precautions for using presses and pullers					
▪ Use presses and pullers					
12. Remove broken studs and taps.					
▪ Identify types of extractors					
▪ Remove broken studs and taps					
13. Install thread repair devices.					
▪ Identify thread repair devices					
▪ Repair damaged internal threads					
14. Finish surfaces.					
▪ Describe metal buffing procedures					
▪ Use files					
▪ Use emery cloth					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of layout and benchwork procedures that will indicate proficiency in the learning outcomes specified in the benchwork unit. 90 minute practical demonstration.

AND/OR

2. Challenge exam

- 64 - multiple choice questions
- 60 minutes to complete the exam

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

MACH 100 – Computer Numerical Control

The course provides an introduction to the principles and practices for programming and operating Computer Numerical Control (CNC) machine tools. You will have the opportunity to write and run a CNC program for a lathe and a milling machine.

Credit unit(s): 1.0

MACH 100 – Computer Numerical Control Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Describe principles of C.N.C. programming.					
▪ Use cartesian coordinate system					
▪ Describe machine tool moves					
▪ Describe the CNC machine					
▪ Explain CNC process steps					
2. Write a C.N.C. program.					
▪ Explain Block format using M and G codes					
▪ Write program start up segment					
▪ Write material removal program segment					
▪ Write program shutdown segment					
▪ Run simulation					
3. Run a C.N.C. program.					
▪ Set up tooling					
▪ Set up controls					
▪ Perform dry run					
▪ Machine part					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance CNC procedures that will indicate proficiency in the learning outcomes specified in the CNC Operations unit.

2.5 hrs. practical demonstration.

AND/OR

2. Challenge exam

- 35 - multiple choice questions
- 60 minutes to complete the exam

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

Machine Tool Practice. Eighth Edition. (available at all [Saskatchewan Polytechnic bookstores](#))

MACH 101 – Drilling Machine Operations

You will learn how to set up, operate and maintain various drilling machines. The course content includes drilling, reaming, tapping and boring operations.

Credit unit(s): 4.0

MACH 101 – Drilling Machine Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Service drilling machines.					
▪ Identify drilling machines and their uses					
▪ Identify parts and controls of drilling machines					
▪ Maintain drilling machines					
2. Select feeds and speeds for drilling operations.					
▪ Calculate spindle speeds					
▪ Determine feed rate					
3. Select work holding devices for drilling operations.					
▪ Describe use of work holding devices					
▪ Identify work holding procedures					
4. Identify drilling tools.					
▪ Identify drills for ferrous and nonferrous materials					
▪ Identify special purpose drills					
5. Drill holes.					
▪ Use sensitive drill press					
▪ Use radial arm drill					
6. Ream holes.					
▪ Identify types of machine reamers					
▪ Select feeds and speeds for reamers					
▪ Ream holes using a drill press					
7. Perform countersinking, counterboring and spotfacing.					
▪ Identify tools for countersinking					
▪ Perform countersinking					

MACH 101 – Drilling Machine Operations					
Mastery: I am able to demonstrate it well enough to teach it to someone else.	Mastery	Competent	Functional	Learning	None
Competent: I can work independently to apply the outcome.					
Functional: I need some assistance in using the outcome.					
Learning: I am developing skills and knowledge for this area.					
None: I have no experience with the outcome.					
8. Power tap holes.					
▪ Identify types of taps					
▪ Select tapping speeds					
▪ Identify tapping problems and solutions					
▪ Power tap holes using a drill press					
9. Tap holes by hand on a drill press.					
▪ Identify taps					
▪ Calculate tap drill size					
▪ Tap holes by hand on a drill press					
10. Bore holes using a radial drilling machine.					
▪ Describe the boring operation on a radial drilling machine					
▪ Bore holes in a radial drilling machine					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- 50 - multiple choice questions
- 60 minutes to complete the exam

AND

2. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of layout and Drilling Machine Operations procedures that will indicate proficiency in the learning outcomes specified in the Drilling Machine Operations unit. 90 minute practical demonstration.

Note: Due to safety considerations, the PLAR candidate is required to meet the requirements of step one in order to move on to step two.

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition

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MACH 102 – Grinding Operations

You will learn how to set up, operate, and maintain various grinding machines. The course content includes selecting, mounting and balancing grinding wheels, feed rates and speeds.

Credit unit(s): 4.0

MACH 102 – Grinding Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Select grinding wheels.					
▪ Explain grinding wheel care and safety					
▪ Define standard wheel marking system					
▪ Select grinding wheels					
2. Perform truing, dressing and balancing operations.					
▪ Mount grinding wheels					
▪ Balance grinding wheels					
▪ True and dress grinding wheels					
3. Service a surface grinder.					
▪ Identify parts and controls and their functions					
▪ Identify lubrication and maintenance procedures					
▪ Identify safety practices					
▪ Service a horizontal surface grinder					
4. Operate a surface grinder.					
▪ Identify work holding methods					
▪ Use magnetic chucks					
▪ Determine feed, depth of cut and traverse movement					
▪ Use the surface grinder					
5. Service a centre type cylindrical grinder.					
▪ Identify parts and controls and their functions					
▪ Identify safety practices					
▪ Identify lubrication and maintenance procedures					
▪ Service a centre type cylindrical grinder					

MACH 102 – Grinding Operations					
Mastery: I am able to demonstrate it well enough to teach it to someone else.					
Competent: I can work independently to apply the outcome.					
Functional: I need some assistance in using the outcome.					
Learning: I am developing skills and knowledge for this area.					
None: I have no experience with the outcome.					
	Mastery	Competent	Functional	Learning	None
6. Operate a centre type cylindrical grinder.					
▪ Select work holding devices					
▪ Set up to grind between centres					
▪ Use cylindrical grinder					
▪ Adjust machine to achieve correct surface finish					
7. Perform honing operations.					
▪ Explain equipment necessary for portable handhoning operations					
▪ Identify abrasives used					
▪ Identify safety practices					
▪ Use honing equipment					
▪ Adjust hone to achieve correct surface finish					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- 58 - multiple choice questions
- 60 minutes to complete the exam

AND

2. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of Precision Grinding procedures that will indicate proficiency in the learning outcomes specified in the Precision Grind unit. 90 minute practical demonstration.

Note: Due to safety considerations, the PLAR candidate is required to meet the requirements of step one in order to move on to step two.

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

MACH 103 – Lathe Operations

You will learn how to set up, operate, and maintain a lathe. The course content includes turning, boring, drilling, taper turning, internal/external threading operations, feed rates and speed.

Credit unit(s): 15.0

MACH 103 – Lathe Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Service engine/lathes.					
▪ Identify parts and controls of a lathe and their functions					
▪ Identify lubrication and maintenance procedures					
▪ Identify lathe safety precautions					
▪ Operate the lathe controls					
2. Grind lathe cutting tools.					
▪ Identify tool holding devices for the lathe					
▪ Identify form tools					
▪ Identify tool angles					
▪ Grind lathe cutting tools					
3. Use lathe work holding devices.					
▪ Identify lathe work holding devices					
▪ Select lathe work holding devices					
▪ Mount work in a 4 jaw chuck					
▪ True work in a 4 jaw chuck					
▪ Service lathe chucks					
4. Perform face and center drill operations.					
▪ Select facing tools					
▪ Calculate speeds and feeds for facing and center drilling					
▪ Perform facing and center drilling operations on a workpiece					
5. Turn between centers.					
▪ Describe turning between centers					
▪ Select feeds and speeds					

MACH 103 – Lathe Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
<ul style="list-style-type: none"> ▪ Describe lathe center alignment procedures 					
<ul style="list-style-type: none"> ▪ Describe how to turn to size 					
<ul style="list-style-type: none"> ▪ Turn a shaft between centers to specified tolerances for length and diameter 					
6. Perform drilling, boring and reaming operations.					
<ul style="list-style-type: none"> ▪ Describe lathe drilling procedures 					
<ul style="list-style-type: none"> ▪ Describe lathe boring procedures 					
<ul style="list-style-type: none"> ▪ Describe lathe reaming procedures 					
<ul style="list-style-type: none"> ▪ Perform drilling, boring and reaming operations to a tolerance specified on a drawing 					
7. Perform knurling operations.					
<ul style="list-style-type: none"> ▪ Describe the knurling procedure 					
<ul style="list-style-type: none"> ▪ Knurl a workpiece 					
8. Perform grooving, parting and tapping operations.					
<ul style="list-style-type: none"> ▪ Identify recessing and grooving procedures 					
<ul style="list-style-type: none"> ▪ Identify lathe tapping procedures 					
<ul style="list-style-type: none"> ▪ Identify parting-off procedures 					
<ul style="list-style-type: none"> ▪ Perform recessing, grooving, parting and tapping operations on a workpiece as specified on a drawing 					
9. Cut external threads.					
<ul style="list-style-type: none"> ▪ Identify the 60 degree thread forms 					
<ul style="list-style-type: none"> ▪ Calculate thread depth, infeeds, and minor diameters of threads 					
<ul style="list-style-type: none"> ▪ Set up a lathe for threading 					
<ul style="list-style-type: none"> ▪ Describe thread measurement procedures 					
<ul style="list-style-type: none"> ▪ Cut various thread forms 					
10. Machine with carbide tooling.					
<ul style="list-style-type: none"> ▪ Identify types of carbide lathe cutting tools 					
<ul style="list-style-type: none"> ▪ Identify carbide cutting tool geometry 					
<ul style="list-style-type: none"> ▪ Identify carbide inserts and tool holders by number systems developed by the American Standards Association 					

MACH 103 – Lathe Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
<ul style="list-style-type: none"> ▪ Calculate cutting speeds and feeds for turning with single point carbide cutting tools 					
<ul style="list-style-type: none"> ▪ Use carbide tooling to machine a workpiece 					
11. Cut internal threads.					
<ul style="list-style-type: none"> ▪ Calculate dimensions for internal threads 					
<ul style="list-style-type: none"> ▪ Cut an internal thread 					
12. Turn a taper using a taper attachment.					
<ul style="list-style-type: none"> ▪ Identify the uses and types of tapers 					
<ul style="list-style-type: none"> ▪ Identify taper measurement methods 					
<ul style="list-style-type: none"> ▪ Calculate taper information 					
<ul style="list-style-type: none"> ▪ Cut a taper to specifications using the taper attachment method 					
13. Turn a taper by offsetting tailstock.					
<ul style="list-style-type: none"> ▪ Calculate tailstock offset for specified tapers 					
<ul style="list-style-type: none"> ▪ Describe the procedures for turning a taper by offsetting the tailstock 					
<ul style="list-style-type: none"> ▪ Calculate tailstock offset for specified tapers 					
14. Turn a steep taper using the compound.					
<ul style="list-style-type: none"> ▪ Calculate angles to set the compound rest for turning steep tapers 					
<ul style="list-style-type: none"> ▪ Set the compound rest 					
<ul style="list-style-type: none"> ▪ Turn a steep taper as specified on a drawing 					
15. Use steady rest and follower rest.					
<ul style="list-style-type: none"> ▪ Describe use of a steady rest 					
<ul style="list-style-type: none"> ▪ Use a steady rest 					
<ul style="list-style-type: none"> ▪ Describe use of a follower rest 					
<ul style="list-style-type: none"> ▪ Use a follower rest 					
16. Use a tool post grinder.					
<ul style="list-style-type: none"> ▪ Describe use of a toolpost grinder 					
<ul style="list-style-type: none"> ▪ Set up a tool post grinder 					
<ul style="list-style-type: none"> ▪ Use a tool post grinder 					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- 64 - multiple choice questions
- 60 minutes to complete the exam

AND

2. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of Lathe Operation procedures that will indicate proficiency in the learning outcomes specified in the Lathe Operation unit. 180 minute practical demonstration.

Note: Due to safety considerations, the PLAR candidate is required to meet the requirements of step one in order to move on to step two.

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

MACH 103 Course pack

Machine Tool Practice. Eighth Edition.

MACH 104 – Milling Machine Operations

You will learn how to set up, operate and maintain various milling machines and attachments. The course content includes selecting tools, holders, feed rates and speeds for various cutter and material applications.

Credit unit(s): 11.0

MACH 104 – Milling Machine Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Service a vertical milling machine.					
▪ Identify the parts and controls on a vertical milling machine					
▪ Perform routine maintenance on the machine					
2. Select cutting tools and holders for vertical milling machine.					
▪ Identify cutters for the vertical mill					
▪ Identify cutter holding devices					
3. Use digital readout equipment.					
▪ Describe function of input keys					
▪ Describe digital read out applications					
▪ Demonstrate the use of digital readout equipment					
4. Select feeds and speeds for vertical milling machines.					
▪ Calculate cutting speeds and feeds for vertical milling operations					
▪ Select cutting speeds and feeds for vertical milling operations					
5. Set up vertical milling machines.					
▪ Square the machine toolhead to the table					
▪ Align table					
▪ Align milling vise					
▪ Set up workpiece					
▪ Locate workpiece relative to the spindle					
6. Perform vertical milling machine operations.					
▪ Identify set ups and operations for vertical milling procedures					
▪ Mill flat surfaces					

MACH 104 – Milling Machine Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
<ul style="list-style-type: none"> ▪ Mill keyways and grooves 					
<ul style="list-style-type: none"> ▪ Drill holes 					
7. Use an offset boring head.					
<ul style="list-style-type: none"> ▪ Describe functions of offset boring head 					
<ul style="list-style-type: none"> ▪ Set up offset boring head 					
<ul style="list-style-type: none"> ▪ Calculate feeds and speeds 					
<ul style="list-style-type: none"> ▪ Use offset boring head 					
8. Service horizontal milling machine.					
<ul style="list-style-type: none"> ▪ Identify the parts and controls on a horizontal milling machine 					
<ul style="list-style-type: none"> ▪ Perform routine maintenance on the machines 					
9. Select cutting tools and holders for horizontal milling machines.					
<ul style="list-style-type: none"> ▪ Identify cutters for the horizontal mill 					
<ul style="list-style-type: none"> ▪ Identify cutter holding devices 					
10. Select feeds and speeds for horizontal milling machines.					
<ul style="list-style-type: none"> ▪ Calculate cutting speeds and feeds for horizontal milling operations 					
<ul style="list-style-type: none"> ▪ Select cutting speeds and feeds for horizontal milling operations 					
11. Set up horizontal milling machines.					
<ul style="list-style-type: none"> ▪ Identify setups and operations for horizontal milling procedures 					
<ul style="list-style-type: none"> ▪ Align the table on the universal mill 					
<ul style="list-style-type: none"> ▪ Mount arbors and cutters 					
<ul style="list-style-type: none"> ▪ Mount a mill vise 					
<ul style="list-style-type: none"> ▪ Identify common milling operations 					
12. Perform horizontal milling machine operations.					
<ul style="list-style-type: none"> ▪ Identify work holding methods and devices for common milling tasks 					
<ul style="list-style-type: none"> ▪ Mill flat surface 					
<ul style="list-style-type: none"> ▪ Mill keyways and grooves 					
<ul style="list-style-type: none"> ▪ Perform straddle milling 					

MACH 104 – Milling Machine Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
13. Operate indexing heads and rotary tables.					
▪ Describe the types of rotary tables, dividing heads and their functions					
▪ Perform calculations					
▪ Set up rotary table					
▪ Use rotary table					
▪ Set up a dividing head					
▪ Use a dividing head					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- 74 - multiple choice questions
- 90 minutes to complete the exam

AND

2. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of layout and Milling Machine Operations procedures that will indicate proficiency in the learning outcomes specified in the Milling Machine Operations unit. 3.5 hours practical demonstration.

Note: Due to safety considerations, the PLAR candidate is required to meet the requirements of step one in order to move on to step two.

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

MACH 104 Course pack

Machine Tool Practice. Eighth Edition.

MACH 105 – Sawing Operations

You will learn how to set up, operate, and maintain various cut-off machines. The course content includes selecting cutting blades and calculating speeds.

Credit unit(s): 1.0

MACH 105 – Sawing Operations Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Describe the power hacksaw.					
▪ Identify the types and major parts of power hacksaws					
▪ Identify blade selection and installation					
▪ Identify power hacksaw safety precautions					
▪ Identify power hacksaw operations					
▪ Operate a power hacksaw to cut material					
2. Operate a horizontal band saw.					
▪ Identify horizontal band saw operations					
▪ Select blades					
▪ Weld blades					
▪ Install blades					
▪ Identify safety precautions for horizontal band saws					
▪ Cut material using a horizontal band saw					
3. Operate vertical band saw.					
▪ Identify types and uses of vertical band machines					
▪ Weld band saw blades					
▪ Prepare the vertical band machine for operation					
▪ Perform sawing operations on the vertical band machine					
4. Describe the use of abrasive and cold saws.					
▪ Identify the operation of cut off and cold cut saws					
▪ Describe the use of abrasive cut off and cold cut saws					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- 40 - multiple choice questions
- 45 minutes to complete the exam

AND

2. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of various set up procedures and cutting operations that will indicate proficiency in the use of the horizontal stock cut off saw and the vertical contour saw. 60 minutes practical demonstration.

Note: Due to safety considerations, the PLAR candidate is required to meet the requirements of step one in order to move on to step two.

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

MATE 100 – Materials Selection

Your studies will focus on identifying the mechanical properties of different materials and the effect they have on machinability. You will also learn how to identify, select and use various materials in machining processes covered.

Credit unit(s): 1.0

MATE 100 – Materials Selection Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Select ferrous metals.					
▪ Identify types and properties of ferrous metals					
▪ Identify ferrous metal identification systems					
▪ Select ferrous metals for job applications					
2. Select nonferrous metals.					
▪ Identify types and properties of nonferrous metals					
▪ Identify nonferrous metal identification systems					
▪ Select nonferrous metals for job applications					
3. Select non-metallic materials.					
▪ Identify the uses of plastics, rubber, carbon and ceramics					
▪ Select non-metals for various job applications					
4. Perform material identification.					
▪ Describe metal testing procedures					
▪ Identify different types of metals					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- 41 - multiple choice questions
- 60 minutes to complete the exam

AND

2. Demonstration

The PLAR candidate will be asked to identify various work piece materials that can be identified visually by surface characteristics, and/or identified by spark test and/or magnet test. 60 minutes practical demonstration.

Note: Due to safety considerations, the PLAR candidate is required to meet the requirements of step one in order to move on to step two.

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

MATH 104 – Applied Mathematics

After reviewing basic mathematics, you will receive an introduction to mathematical concepts that support applications made in machine shop work.

Credit unit(s): 3.0

MATH 104 – Applied Mathematics Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Use basic mathematics.					
▪ Use whole numbers					
▪ Use fractions					
▪ Use decimals					
▪ Use fractions and decimals					
▪ Use powers and roots					
▪ Use percent					
2. Convert between imperial and metric systems.					
▪ Describe metric system					
▪ Perform metric SI conversions					
▪ Describe imperial system					
▪ Perform imperial conversions					
▪ Convert between imperial and metric systems					
3. Use basic algebra.					
▪ Use equations. This includes operations with signed numbers, operations with algebraic expression such as $2x + 3(x - 7)$, equations such as $14 - 2x^2 = 36$ or $0.58y = 18.3 - 0.02y$, and rearranging formulas such as $d = D - (TPI \times L)$ for D					
▪ Calculate ratios					
▪ Calculate proportions, for example, A plug gauge tapers 3 mm along a 25 mm length; find the amount of taper along a length of 10 mm.					
4. Use basic geometry and trigonometry.					
▪ Calculate angles in various geometric settings, for example, given some of the angles between intersecting lines, calculate the measure of other angles					
▪ Use the Pythagorean theorem					

MATH 104 – Applied Mathematics Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
<ul style="list-style-type: none"> Use trigonometric functions to solve triangles (right triangles only) 					
<ul style="list-style-type: none"> Solve for sine bars and tapers, for example, find the large diameter of a 4 inch taper with a small diameter of 0.6 inches and a taper angle of 12° 					
<ul style="list-style-type: none"> Calculate the lengths of arcs, chords, angles of circles, for example, find the length of a chord cut off by a 25° central angle if the radius of the circle is 2.8 inches 					
<ul style="list-style-type: none"> Plot points on the Cartesian plane, for example, find the coordinates of the hole centers on a 24 cm diameter bolt circle with 11 equally spaced holes 					
5. Perform trade calculations.					
<ul style="list-style-type: none"> Use trade formulas: This includes formulas to calculate the cutting speed and RPM of a machine, a tap drill size, dimensions of a spur gears dimensions of a tapered shaft, indexing for dividing heads and rotary tables 					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- Passing mark is 60%
- A scientific calculator is allowed
- The Machinists’ Ready Reference and/or the Engineers Black Book is allowed
- The test consists of 44 questions: 30 multiple choice and 14 calculation questions. Percentage of questions per learning outcome: LO1 20%, LO2 8%, LO3 26%, LO4 26%, LO5 20%.

Example: The outside diameter of a pipe is 2.8 cm and the thickness of the pipe is 2 mm. The inside diameter of the pipe is

- (a) 2.6 cm
- (b) 2.4 cm
- (c) 2.2 cm
- (d) 0.8 cm

Correct answer is (b) 2.4 cm

Example: A and C are tangent points

$$r = 2.750'' \quad \overline{AB} = 3.25''$$

Find the included angle, $\angle ABC$, to the nearest minute.

Correct answer:

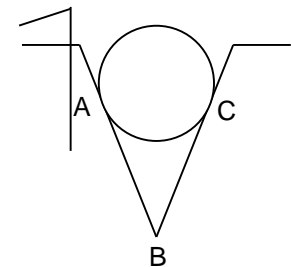
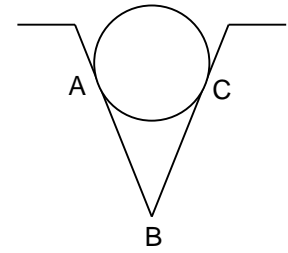
Draw a radius to tangent point A. Radius will be perpendicular to tangent line.

Draw a line from circle center to vertex point B. This line will bisect $\angle ABC$.

$$\tan \theta = \frac{2.750}{3.25}$$

$$\theta = 40.236^\circ$$

$$\angle ABC = 2 \theta = 80.473^\circ = 80^\circ 28'$$



Resources

Mathematics for Machine Technology, 5th Edition, Smith. Thomson Delmar Learning, Clifton Park NY, 2004

Blueprint Reading for the Machine Trades, 6th edition. Schultz and Smith, Pearson Prentice Hall, Upper Saddle River NJ, 2008

Machinists' Ready Reference, 9th Edition. Weingartner, Prakken Publications, Ann Arbor, MI, 2001

Engineers Black Book, USA Edition. Rapp, Pat Rapp Enterprises, Perth Western Australia, 2005

Machinist Math 104 Applied Mathematics, Saskatchewan Polytechnic

Any text book that covers basic mathematics, basic algebra, right triangle trigonometry, properties of lines, angles, circles.

MEAS 100 – Precision Measurement

You will learn how to select appropriate measuring tools and perform accurate measurements.

Credit unit(s): 3.0

MEAS 100 – Precision Measurement Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Measure with semi-precision measuring tools.					
▪ Use inch measuring systems					
▪ Use metric measuring systems					
▪ Perform inch-metric conversions					
▪ Use semi-precision measuring tools					
2. Measure with vernier calipers and vernier depth gauges.					
▪ Read inch vernier calipers					
▪ Read metric vernier calipers					
▪ Read vernier depth gauges					
▪ Measure with vernier calipers and vernier depth gauges					
3. Measure with inch micrometers.					
▪ Identify types of micrometers					
▪ Read inch outside micrometers					
▪ Read inside micrometers					
▪ Read inch depth micrometers					
▪ Read inch vernier micrometers					
▪ Measure with inch micrometers					
4. Measure with metric micrometers.					
▪ Read metric measurements					
▪ Measure with metric micrometers					
5. Measure with universal bevel protractor.					
▪ Identify units of angular measure					
▪ Identify parts of a universal bevel protractor					
▪ Identify uses of universal bevel protractor					
▪ Use a universal bevel protractor					

MEAS 100 – Precision Measurement					
Mastery: I am able to demonstrate it well enough to teach it to someone else.	Mastery	Competent	Functional	Learning	None
Competent: I can work independently to apply the outcome.					
Functional: I need some assistance in using the outcome.					
Learning: I am developing skills and knowledge for this area.					
None: I have no experience with the outcome.					
6. Use telescopic and small hole gauges.					
▪ Identify telescoping gauges and small hole gauges and their uses					
▪ Measure workpieces with telescoping gauges and small hole gauges					
7. Use adjustable parallels and dial indicators.					
▪ Use adjustable parallels					
▪ Use dial indicators					
8. Measure with precision inspection instruments.					
▪ Use a precision height gauge					
▪ Use gauge blocks					
9. Use sine bar.					
▪ Calculate sine bar elevations					
▪ Measure angles using a sine bar					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Demonstration

The PLAR candidate will be asked to successfully demonstrate performance of measuring exercises that will indicate proficiency in semi-precision and precision measurement. 30 minute practical demonstration.

AND/OR

2. Challenge exam

- 50 - multiple choice questions
- 45 minutes to complete the exam

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

PRNT 100 – Blueprint Reading

The course content includes reading and interpreting blueprints.

Credit unit(s): 1.0

PRNT 100 – Blueprint Reading Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Interpret features in all views.					
▪ Recognize feature by shape					
▪ Find feature in other views					
▪ Recognize pattern in views					
▪ Recognize feature by shape					
2. Identify required dimensions in all views.					
▪ Find size dimensions					
▪ Identify location dimensions					
▪ Locate orientation dimensions					
▪ Find size dimensions					
3. Interpret tolerances.					
▪ Locate tolerances					
▪ Identify geometric tolerance zones					
▪ Calculate tolerances for features					
4. Plan jobs.					
▪ Locate dimensions for overall size of finished part					
▪ Calculate requirement for holding part					
▪ Identify finish allowance					
▪ Apply cutting allowance					
▪ Calculate required size of raw material					
▪ Select machine process					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Challenge exam

- The exam consists of 7 work sheets from: Blue Print Reading for the Machine Trades 6th ed.
- 90 minutes to complete the exam

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

THER 100 – Heat Treatment Processes

You will perform various heat treatment processes and hardness testing procedures.

Credit unit(s): 1.0

THER 100 – Heat Treatment Processes	Mastery	Competent	Functional	Learning	None
Mastery: I am able to demonstrate it well enough to teach it to someone else.					
Competent: I can work independently to apply the outcome.					
Functional: I need some assistance in using the outcome.					
Learning: I am developing skills and knowledge for this area.					
None: I have no experience with the outcome.					
1. Select heat treatment processes.					
▪ Describe heat treatment processes					
▪ Select heat treatment processes					
2. Perform hardness testing.					
▪ Describe Rockwell and Brinell hardness testers and their use					
▪ Perform hardness testing					
3. Perform hardening, case hardening and tempering.					
▪ Identify heat treating equipment					
▪ Harden and temper a workpiece of steel					
▪ Case harden a piece of steel					
4. Describe annealing, normalizing and stress relieving processes.					
▪ Explain annealing					
▪ Explain normalizing					
▪ Explain stress relieving					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Evidence file

An interview may be required to support the evidence file. If there are gaps in the Evidence File, a further demonstration of the candidate's learning may be required.

- Completed THER 100 PLAR Employer validation checklist ([Appendix B](#))
- Signed Employment validation form ([Appendix A](#))

AND/OR

2. Challenge exam

- 37 - multiple choice questions
- 60 minutes to complete the exam

Resources

A PLAR candidate may find it beneficial to review the following material in preparation for the assessment. The resources may be referred to, but are not required.

The suggested resources are available at all [Saskatchewan Polytechnic bookstores](#).

Machine Tool Practice. Eighth Edition.

WORK 100 – Industrial Attachment

To enhance your understanding of workplace and employer needs, you will participate in a work placement.

Credit unit(s): 0.0

WORK 100 – Industrial Attachment Mastery: I am able to demonstrate it well enough to teach it to someone else. Competent: I can work independently to apply the outcome. Functional: I need some assistance in using the outcome. Learning: I am developing skills and knowledge for this area. None: I have no experience with the outcome.	Mastery	Competent	Functional	Learning	None
1. Describe WHMIS.					
▪ Identify the purpose and components of WHMIS					
▪ Explain the WHMIS hazard symbols					
▪ Describe a WHMIS supplier label					
▪ Explain information on Material Safety Data Sheets (MSDS)					
▪ Describe employer and employee rights and responsibilities under WHMIS legislation					
2. Describe Occupational Health and Safety.					
▪ Explain purpose of OH & S legislation					
▪ Identify common workplace hazards					
▪ Identify general safety practices					
▪ Describe reporting procedure for accidents					
▪ Explain employer and employee responsibilities to ensure a safe working environment					
3. Follow safety procedures and practices.					
▪ Identify personal safety practices					
▪ Identify shop hazards					
▪ Identify machine hazards					
▪ Use safe lifting and rigging practices					
4. Demonstrate employability skills.					
▪ Recognize workplace procedures					
▪ Demonstrate positive attitudes and behaviours					

PLAR assessment methods

If you qualify for PLAR, you may be asked to demonstrate your learning in one or more of the following ways. Be prepared to discuss the expectations during a consultation meeting.

1. Evidence file

An interview may be required to support the evidence file. If there are gaps in the evidence file, a further demonstration of the candidate's learning may be required.

- Documentation of a valid WHMS certificate
- Completed WORK 100 PLAR Employer validation checklist ([Appendix C](#))
- Signed Employment validation form ([Appendix A](#))

Machinist Certificate

Appendices

Appendix A: Employment validation form



MACHINE SHOP PROGRAM PRIOR LEARNING ASSESSMENT AND RECOGNITION (PLAR) EMPLOYMENT VALIDATION FORM

An essential part of Prior Learning Assessment and Recognition is documentation that serves as evidence for the Saskatchewan Polytechnic assessor that the employee/candidate has acquired skills and knowledge as they relate to the specific learning outcomes for the course(s) they are seeking credit. This **Employment validation form** together with the appropriate **Employer validation checklist** provides an indirect, authenticated account of the employee/candidate's performance in industry.

Employee/ PLAR Candidate: _____
(please print)

Employment Information: (please print)

Employer: _____

Employer Address: _____

Employer Phone Number: _____ **Fax:** _____

Employer Email: _____

Dates of Employment: _____ **to** _____
(dd/mm/yy) (dd/mm/yy)

Employment Description: Full-time Hours per week: _____
Part-time Hours per week: _____

Job description (may be attached):

_____ **Date** _____
(Employer's signature)

Note to Employee/PLAR Candidate:

The information on this form must be completed and signed by your employer/supervisor or designate indicating the job description, and place and length of employment. This form, together with the appropriate signed and dated **Employer validation checklist(s)** should be returned to your PLAR assessor at Saskatchewan Polytechnic.

Appendix B: THER 100 – Employment validation checklist



MACHINE SHOP PROGRAM

PRIOR LEARNING ASSESSMENT AND RECOGNITION (PLAR)

EMPLOYER VALIDATION CHECKLIST – THER 100 - Heat Treatment Processes

Directions for Validator: On the following page(s) there is a list of skill and knowledge factors that the employee/PLAR candidate is required to achieve in completing THER 100. Please rate the employee/candidate's performance by placing a ✓ in the appropriate descriptor column (Meets Criteria, Developing this skill, Not observed).

Add any clarifications/observations in the "Optional Comments" section. Sign and date below and include with the Employment validation form ([Appendix A](#)).

Criteria for the performance descriptors are as follows:

Descriptor	Criteria
Demonstrates this skill:	Employee/PLAR Candidate is able to work independently to perform the skill/task.
Developing this skill:	Employee/PLAR Candidate needs some assistance to perform the skill/task and/or is developing the skills and knowledge for this task.
Not observed:	Employee/PLAR Candidate has no experience with skill/task.

Employee/PLAR Candidate Name: _____

Name of Validator _____

Employer: _____ **Job Title** _____

Telephone: _____ **Fax:** _____

E-Mail: _____

Note to Employee/PLAR Candidate:

Employee/PLAR Candidates for the challenge of THER 100 must have this form completed by their direct employer/supervisor. The employer/supervisor is responsible for ensuring the Employer validation checklist accurately reflects your abilities in each area identified.

Employer/Supervisor validation

Descriptor	Criteria
Demonstrates this skill:	Employee/PLAR Candidate is able to work independently to perform the skill/task.
Developing this skill:	Employee/PLAR Candidate needs some assistance to perform the skill/task and/or is developing the skills and knowledge for this task.
Not observed:	Employee/PLAR Candidate has no experience with skill/task.

Skill	Demonstrates this skill	Developing this skill	Not observed
1. Demonstrates knowledge of the hardening processes.			
2. Correctly selects heat treatment processes to achieve specific properties based on drawing specs.			
3. Demonstrates an understanding of Rockwell and Brinell hardness testers and methods.			
4. Performs hardness tests.			
5. Is able to identify heat treatment equipment.			
6. Performs hardening, case hardening and tempering.			
7. Demonstrates an understanding of annealing, normalizing and stress relieving processes.			

General comments regarding the employee/PLAR candidate's performance (optional):

I affirm that I am the person who has administered this checklist, and that I have conducted this employee skills assessment with integrity. I also affirm that the above named employee is the person whose performance I validated, and that the above named person performed the checked tasks at the indicated level without assistance from me or any other person.

Validator's Signature: _____ Date: _____

Appendix C: WORK 100 – Employment validation checklist



MACHINE SHOP PROGRAM

PRIOR LEARNING ASSESSMENT AND RECOGNITION (PLAR)

EMPLOYER VALIDATION CHECKLIST – WORK 100 – Industrial Attachment

Directions for Validator: On the following page(s) there is a list of skill and knowledge factors that the employee/PLAR candidate is required to achieve in completing WORK 100. Please rate the employee/candidate's performance by placing a ✓ in the appropriate descriptor column (Meets Criteria, Developing this skill, Not observed).

Add any clarifications/observations in the "Optional Comments" section. Sign and date below and include with the Employment validation form ([Appendix A](#)).

Criteria for the performance descriptors are as follows:

Descriptor	Criteria
Demonstrates this skill:	Employee/PLAR Candidate is able to work independently to perform the skill/task.
Developing this skill:	Employee/PLAR Candidate needs some assistance to perform the skill/task and/or is developing the skills and knowledge for this task.
Not observed:	Employee/PLAR Candidate has no experience with skill/task.

Employee/PLAR Candidate Name: _____

Name of Validator _____

Employer: _____ **Job Title** _____

Telephone: _____ **Fax:** _____

E-Mail: _____

Note to Employee/PLAR Candidate:

Employee/PLAR Candidates for the challenge of WORK 100 must have this form completed by their direct employer/supervisor. The employer/supervisor is responsible for ensuring the Employer validation checklist accurately reflects your abilities in each area identified.

Employer/Supervisor validation

Descriptor	Criteria
Demonstrates this skill:	Employee/PLAR Candidate is able to work independently to perform the skill/task.
Developing this skill:	Employee/PLAR Candidate needs some assistance to perform the skill/task and/or is developing the skills and knowledge for this task.
Not observed:	Employee/PLAR Candidate has no experience with skill/task.

Skill	Demonstrates this skill	Developing this skill	Not observed
1. Demonstrates knowledge and understanding of WHMIS.			
2. Demonstrates Occupational Health and Safety practices.			
3. Follows safety procedures and practices.			
4. Demonstrates employability skills.			

General comments regarding the employee/PLAR candidate's performance (optional):

I affirm that I am the person who has administered this checklist, and that I have conducted this employee skills assessment with integrity. I also affirm that the above named employee is the person whose performance I validated, and that the above named person performed the checked tasks at the indicated level without assistance from me or any other person.

Validator's Signature: _____ Date: _____