Agricultural Equipment Technician Certificate

PLAR Candidate Guide

Prior Learning Assessment and Recognition (PLAR)

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Prior learning credit options at Saskatchewan Polytechnic

See Get Credit for What you Know for important information about all options to get credit for prior learning at Sask Polytech, including PLAR, transfer credit, Canadian Armed Forces credit, and equivalency credit.

How to navigate this document

This document contains links to other document sections or webpages. To return to where you were from another section in this document, press the *ALT* key and *left arrow* key at the same time. To return to this webpage from another webpage, close the other webpage or click back on the browser tab for this document.

Contents of this guide

This guide contains the following specific PLAR information and tools for this program

A. PLAR fees

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.

Chris Thomson, Program Head
School of Transportation
Saskatchewan Polytechnic—Saskatoon Campus
Phone: 306 – 659 - 4454
Email: thomson@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
AIR 183	Air Conditioning and Heating	
ELEC 122	Electrical Basics	
ELEC 123	Electrical Systems and Operations	
ENGN 128	Engine Overhaul and Assessment	
ENGN 129	Engine Overhaul and Assembly	
ENGN 191	Engines Basics	
ENGN 192	Engines Fuel Systems	
EQPT 194	Seeding and Tillage Equipment	
EQPT 196	Harvesting Equipment	
EQPT 197	Hay and Forage Equipment	
EQPT 198	Sprayers and Applicators	

COURSE CODE	COURSE NAME	Delivered by another department/program
EQPT 199	Pre-Delivery and Performance	
FMMT 100	Precision Farming Operations	
HYDR 124	Introduction to Hydraulic Pumps and Valves	
HYDR 125	Introduction to Hydraulic Flow Controls	
JOBS 125	Essential Job Skills	Arts & Sciences
MATH 169	Trade Mathematics	Arts & Sciences
SHOP 124	Hand Tools and Shop Safety	
SHOP 125	Machine Safety and Operation	
TRNM 190	Primary Driveline Components, Belts and Chains	
TRNM 191	Clutch Drive Systems	
TRNM 192	Differentials and Final Drives	
WLDR 158	Oxy Fuel Cutting (OFC) and Plasma Arc Cutting (PAC)	
WLDR 159	ARC Welding (Shielded Metal Arc Welding)	
WORK 191	Dealership Work Experience	

AIR 183 - Air Conditioning and Heating

You will focus on the theory of operation of the heating, ventilation and air conditioning (HVAC) systems and their components. You will diagnose and repair the HVAC systems and associated controls. You will be certified in the Canada's Ozone Layer Protection Awareness program for air conditioning and refrigeration systems.

Credit unit(s): 2.0
Prerequisites: none
Corequisites: none
Equivalent course(s): AIR 150

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. Select refrigerants and lubricants.			
2. Identify types of heater system malfunctions.			
3. Diagnose air conditioning system malfunctions.			
4. Perform repair on heating, ventilation, and air conditioning (HVAC) system components.			
5. Evaluate pneumatic suspension systems.			

ELEC 122 - Electrical Basics

You will focus on basic electrical theory, including electron theory, Ohm's Law, Watt's Law and the laws of series and parallel circuits. The course content includes battery operation and servicing. You will use multi-meters to explore electrical circuit operation to perform basic diagnostics.

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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe the operation of an electrical circuit.			
2. Describe the relationship between electricity and magnetism.			
3. Analyze the operation of series, parallel and series-parallel circuits.			
4. Perform service procedures on wet-cell batteries.			
5. Describe the operation and function of circuit control devices.			
6. Perform basic trouble shooting procedures on an electrical circuit.			

ELEC 123 – Electrical Systems and Operations

You will learn the fundamental operating principles of the components that make up an electrical system. This includes schematic symbols, circuit control, electromagnetic induction, electric motors, and the wiring harnesses that connect these components completing an electrical system. You will explore each of these system components and perform diagnostics.

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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe the operation of circuit control components.			
2. Compare the types of electromagnetic induction components and their relationship to electrical circuits.			
3. Explain the operation of electric motors.			
4. Illustrate schematic symbols used on agricultural equipment.			
5. Test circuit control components.			
6. Explore the fundamental principles used in diagnosing electrical circuits.			
7. Identify the essential components in the construction of a wiring harness.			
8. Demonstrate repair procedures on electrical harnesses and their essential components.			
9. Analyze a functional schematic circuit.			
10. Perform a diagnosis of electrical systems and components using fundamental principles.			

ENGN 128 - Engine Overhaul and Assessment

Your studies will include the construction and operation of the engine's internal and external components. You will inspect, disassemble, and assess the components to determine serviceability. You will support the manufacturer's inspection and repair process using the appropriate service manuals and specialized 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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Perform the inspection and repair of cylinder heads.			
2. Perform the inspection and repair of pistons, connecting rods and sleeves.			
3. Perform the inspection and repair of valve train components.			
4. Perform the inspection and repair of timing gears and accessories.			
5. Perform the inspection and repair of pressurized lubrication systems.			
6. Perform the inspection and repair of crankshafts and bearings.			

ENGN 129 - Engine Overhaul and Assembly

Your studies will focus on the assembly of the internal and external engine components, including sub-assemblies. You will support the manufacturer's inspection and assembly process to ensure quality control, using the appropriate service manuals and specialized tools. You will perform a pre-start inspection, post-assembly inspection, and system checks when the engine is operational.

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. Prepare components for reassembly.			
2. Follow manufacturer's assembly procedures.			
3. Perform ongoing quality control checks on the assembly process.			
4. Discuss internal and external sealing methods.			
5. Assess vibration dampers, flywheels, and inertia balancers.			
6. Perform engine system operational tests.			
7. Explore computerized diagnostic management systems.			

ENGN 191 - Engine Basics

You will study the basic physical principles of operation and construction of two-stroke and four-stroke engines. The course content includes cooling systems, components, and coolants. You will also study additives, lubricants, filter systems, oil analysis and safely cleaning 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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Perform cleaning of parts, equipment and metal surfaces.			
2. Explain the principle of combustion.			
3. Describe the operation of a four-stroke cycle engine.			
4. Describe the operation of a two-stroke cycle engine.			
5. Explore the difference between air-cooled and liquid-cooled engines.			
6. Perform an inspection of splash lubrication systems.			
7. Perform the inspection and testing of cooling systems and components.			
8. Discuss transport and storage of engines.			

ENGN 192 - Engine Fuel Systems

You will be introduced to diesel fuel supply systems and how combustion occurs. You will inspect air induction systems, test engine compression, study high and low-pressure fuel injection systems, and inspect and repair diesel fuel injectors.

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:** 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. Evaluate air induction systems.			
2. Maintain fuel systems.			
3. Inspect low and high-pressure fuel system components.			
4. Compare diesel engine combustion chambers.			
5. Inspect diesel fuel injectors.			
6. Discuss emission controls.			
7. Evaluate the condition of combustion chamber.			
8. Perform the removal and installation of injection pumps.			
9. Adjust fuel injection pump timing.			
10. Inspect turbochargers.			

EQPT 194 - Seeding and Tillage Equipment

You will learn the theory of operation for seeding and tillage equipment and an introduction to precision farming applications, variable rate and section control seeding technology. You will explore the pre-delivery inspection process and service precision seeding equipment. You will develop troubleshooting skills by applying the operational theory of precision seeding equipment to practical applications. You will learn how to work safely when exposed to anhydrous ammonia applicators.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Explain the set-up and pre-delivery inspection process.			
2. Describe the basic operating principles of precision seeding and tillage equipment.			
3. Perform operational adjustments on seeding equipment.			
4. Explain hydraulic and electrical principles used on seeding and tillage equipment.			
5. Explain basic global positioning functions for seeding equipment.			
6. Discuss the hazards and safe practices of anhydrous ammonia.			

EQPT 196 - Harvesting Equipment

You will learn the theory of operation for harvesting equipment and related attachments. You will explore the operation of precision farming applications and how it applies to harvesting equipment. You will explore the practical applications of a combine inspection, assessment, servicing and adjusting harvesting equipment and 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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe the theory of operation for combines based on the five harvesting functions.			
2. Describe the theory of operation for combine component monitoring, yield monitoring and satellite-based yield mapping.			
3. Describe basic electrical and hydraulic principles as they apply to combines.			
4. Inspect basic hydrostatic drive systems.			
5. Inspect components on harvesting equipment.			
6. Inspect yield monitoring and satellite-based yield mapping components.			
7. Discuss the effects of colonization on Indigenous farming practices.			

EQPT 197 - Hay and Forage Equipment

You will study the operating principles and service and repair processes of hay and forage equipment. You will explore how to perform a complete machine inspection and develop a repair plan. You will learn how to adjust, service and repair forage and haying equipment.

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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Discuss hay cutting equipment.			
2. Discuss square baler theory of operation.			
3. Discuss round baler theory of operation.			
4. Discuss forage harvester theory of operation.			
5. Discuss crop material handling processes.			
6. Discuss basic hydrostatic drive systems.			
7. Perform inspection and repair of hay and forage equipment.			
8. Examine Indigenous traditional land uses and practices.			

EQPT 198 - Sprayers and Applicators

You will study the theory of operation, service, repair and calibration of spray systems and applicator systems. You will explore precision farming practices as they pertain to sprayers and applications.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe the theory of operation of sprayer and applicator systems.			
2. Identify the steps necessary for the safe handling of spray products.			
3. Explain the basic principles of precision farming practices as they apply to sprayers and applications.			
4. Explore sprayers and applicator systems.			
5. Perform a calibration of sprayer and applicator systems.			
6. Describe pneumatic suspension systems.			

EQPT 199 - Pre-Delivery and Performance

You will learn the process of the pre-delivery setup and inspection of tractors equipment. You will focus on setting the machine to manufacturer's specifications, overall appearance, installation of accessories, tractor ballasting, and tractor and engine performance.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Define the pre-delivery process.			
2. Perform the pre-delivery of tractors and accessories.			
3. Discuss ballasting for performance.			
4. Discuss theory of a dynamometer.			
5. Use a dynamometer.			

FMMT 100 - Precision Farming Operations

You will explore the basic principles of precision farming practices. You will learn how this benefits the farmer, agriculture technician, consumer, and the environment. You will study the various components of precision farming systems. You will learn how the precision farming system is set up for operation and how data is collected and viewed by the producer and the agriculture technician.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe the benefits of precision farming.			
2. Explain the theory of precision farming.			
3. Describe the operation of a controller area network (CAN) bus.			
4. Perform precision farming operations.			

HYDR 124 - Introduction to Hydraulic Pumps and Valves

Your studies will focus on the basic principles of hydraulics, and you will gain an understanding of component construction and operation. You will examine the construction of hydraulic hoses, pumps, and actuators. You will perform service procedures on an operational hydraulic system. You will learn how each component contributes to the operation of the basic hydraulic system.

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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Discuss hydraulic hose and tubing requirements.			
2. Perform maintenance procedures on hydraulic systems.			
3. Explore the operation of hydraulic pumps.			
4. Compare the operation principles of pressure control valves.			
5. Examine the operation of hydraulic actuators.			
6. Illustrate hydraulic schematic symbols.			
7. Analyze hydraulic system performance.			

HYDR 125 - Introduction to Hydraulic Flow Controls

Your studies will focus on the principles of hydraulic flow and the methods used to direct the flow and control the volume. You will examine hydraulic cylinders and motors. You will interpret hydraulic schematic symbols to develop basic problem-solving skills. You will analyze the various methods used in flow control. You will explore the construction and operation of fixed and variable flow controls.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Explain the operation of flow control valves.			
2. Explain the operation of directional control valves.			
3. Perform the repair and installation of hydraulic system flow control valves.			
4. Interpret basic hydraulic system diagrams and symbols.			
5. Diagnose basic hydraulic system malfunctions.			

JOBS 125 - Essential Job Skills

You will develop essential job skills by preparing job search documents and practicing effective interpersonal communication skills for the workplace.

Credit unit(s): 1.0
Prerequisites: none
Corequisites: none
Equivalent course(s): COMM 106, COMM 127, HUMR 102, TCOM 102, TCOM 105

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Discuss effective workplace interpersonal communications.			
2. Prepare job search documents.			

MATH 169 - Trade Mathematics

You will learn mathematical concepts commonly used in your trade. After reviewing basic arithmetic and basic equations, you will solve various algebra problems as applied to your trade. You will perform Imperial and Metric conversions, calculate the perimeter, area, and volume of many common shapes, and use Pythagorean theorem.

Credit unit(s): 2.0
Prerequisites: none
Corequisites: none
Equivalent course(s): MATH 187

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. Use arithmetic to solve trade-related problems.			
2. Use measurement systems.			
3. Solve trade-related equations and formulas.			
4. Solve geometric problems.			

SHOP 124 - Hand Tools and Shop Safety

You will develop skills that will help you choose the correct tools for the job at hand. You will develop a workplace safety plan and identify hazards in the shop area. You will learn about fasteners and threading procedures and develop skills in using precision measuring tools as well as basic hand fabrication.

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. Employ positive work attitudes and professional behaviours.			
2. Demonstrate shop safety procedures.			
3. Perform procedures to support, block and lift equipment.			
4. Utilize hand tools.			
5. Use press/pulling tools.			
6. Perform drilling operations.			
7. Perform internal and external threading operations.			
8. Repair damaged threads.			
9. Use precision measuring tools.			

SHOP 125 - Machine Safety and Operation

You will learn about machine safety procedures when working around and operating agricultural equipment. You will learn to move tractors, towed equipment, windrowers and combines safely in a shop setting. You will experience the precision farming guidance capabilities. You will become certified in the operation of forklifts and skid steer loaders.

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. Use shop time efficiently.			
2. Employ positive work attitudes and professional behaviors.			
3. Use job related information.			
4. Demonstrate application of standard operating hand signals.			
5. Explain safe machine operating procedures.			
6. Apply Workplace Hazardous Materials Information System (WHMIS).			
7. Perform a pre-shift inspection.			
8. Perform safe equipment operation.			

TRNM 190 - Primary Driveline Components, Belts and Chains

You will learn about basic driveline components and the importance of proper alignment and design. You will perform belt and chain adjustments, explore various bearing types, and perform driveline inspections. You will explore agricultural equipment steering axle geometry.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Perform inspection and adjustment of belt and chain drive components.			
2. Perform diagnosis and repair of drivelines.			
3. Identify types of bearings and their uses.			
4. Perform bearing inspection and replacement.			
5. Perform inspection, repair, and adjustment of steering axles.			

TRNM 191 - Clutch Drive Systems

You will learn about various clutch drive systems used in the agricultural equipment industry. You will describe various types of clutch systems and applications for clutch components. You will learn to safely lift and support equipment in preparation for removal of major components, housings, axles and engines.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe safety precautions when removing major structural components, housings, axles and engines.			
2. Describe the construction and operation of clutches, transmission brakes and adjustment of control linkages.			
3. Describe clutch system components.			
4. Demonstrate safety precautions when removing major structural components, housings, axles, and engines.			
5. Perform inspection, repair and adjustments of clutch system components.			

TRNM 192 - Differentials and Final Drives

You will learn about the principles of gear reduction systems and differentials. You will study hydraulic braking systems used on today's agricultural equipment. Your focus will be on various gear boxes, axles, and final drives.

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:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Describe various gearbox and differential types.			
2. Perform inspection, repair and adjustments on various gearbox and differential types.			
3. Describe various final drives.			
4. Perform inspection, repair, and adjustments on powered axle assemblies.			
5. Perform inspection, repair, and adjustment on hydraulic brake components.			

WLDR 158 - Oxy Fuel Cutting (OFC) and Plasma Arc Cutting (PAC)

You will focus on safety procedures, equipment set-up, and correct operating procedures of oxy-fuel cutting (OFC) and plasma arc cutting (PAC). You will gain experience cutting different types of metal with varying degrees of thickness.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Demonstrate the safe operation of welding and cutting equipment.			
2. Perform freehand and guided cutting on flat bar using an oxy-fuel torch.			
3. Perform freehand cutting of gauge metal using an oxy-fuel torch.			
4. Perform the removal of an inner bearing race from a shaft using an oxy-fuel torch.			
5. Explore plasma cutting and operating procedures.			
6. Perform cutting of ferrous and nonferrous materials using plasma arc process.			

WLDR 159 - ARC Welding (Shielded Metal Arc Welding)

You will focus on safety procedures, equipment set-up and correct operating procedures of shielded metal arc welding (SMAW). You will gain experience through welding various thicknesses of metal in multiple positions.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Perform surface build up using E7014.			
2. Perform horizontal T joint fillet weld, on 1/4 material, using E7024 electrodes.			
3. Perform vertical down, lap joint, fillet weld, on gauge metal, using E6011/E6013 electrodes.			
4. Perform horizontal, T joint, fillet weld, on gauge metal, using E6011/E6013 electrodes.			
5. Perform vertical up 3 pass T joint fillet weld, on 1/4 material, using E6010 and E7018 electrodes for root, fill and cap passes.			

WORK 191 - Dealership Work Experience

You will spend two weeks gaining experience in an agricultural equipment dealership. This will allow you to apply the technical skills and knowledge you acquired during the program. You will have the opportunity to select a company where you would like to complete your work experience.

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

Use a checkmark (✓) to rate yourself as follows for each learning outcome **Competent:** I can apply this outcome without direction or supervision. **Learning:** I am still learning skills and knowledge to apply this outcome. **None:** I have no knowledge or experience related to this outcome.	**Competent**	**Learning**	**None**
1. Demonstrate employability skills.			
2. Apply technical skills.			
3. Demonstrate safe work practices.			
4. Apply effective communication skills.			
5. Demonstrate the ability to work effectively as part of a team.			