



Industrial Mechanic (Millwright)

On-the-Job Training Guide

2024

Online: www.saskapprenticeship.ca

Recognition:

To promote transparency and consistency, this document has been adapted from the 2017 Industrial Mechanic (Millwright) Red Seal Occupational Standard (Employment and Social Development Canada).

A complete version of the Occupational Standard can be found at www.red-seal.ca

STRUCTURE OF THE ON-THE-JOB TRAINING GUIDE

To facilitate understanding of the occupation, this on-the-job training guide contains the following sections:

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard detailing the essential skills and the level of training where the content is covered.

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities.

Task: distinct actions that describe the activities within a major work activity.

Sub-task: distinct actions that describe the activities within a task.

On-the-Job and In-school Training Content for the Industrial Mechanic (Millwright) Trade: a chart which outlines the topics of technical training with on-the-job examples for apprentices to achieve relevant work experience at work.

TRAINING REQUIREMENTS FOR THE INDUSTRIAL MECHANIC (MILLWRIGHT) TRADE

To graduate from each level of the apprenticeship program, an apprentice must successfully complete the required technical training and compile enough on-the-job experience to total at least 1800 hours each year. Total trade time required is 7200 hours and at least 4 years in the trade.

Journeyman to apprentice ratio for this trade is: 1:2

The information contained in this document serves as a guide for employers and apprentices. Apprenticeship training is mutually beneficial to both employer and apprentice. The employer's investment in training apprentices results in skilled and certified workers. The document summarizes the tasks to be covered by the apprentice during their on-the-job portion of apprenticeship training. An apprentice spends approximately 85% of their apprenticeship term training on-the-job.

It is the employer's or journeyman's responsibility to supervise an apprentice's practical skills development until a satisfactory level of proficiency has been reached.

EMPLOYER TRAINING RESPONSIBILITY

- promote a safety-conscious workplace
- provide mentored, hands-on practice in the use of tools and equipment
- provide the opportunity for apprentices to service systems and products
- further the apprentice's ability to interpret technical drawings
- ensure that the apprentice can evaluate the end product.

Employers should make every effort to expose their apprentices to work experience in as many areas of the trade as possible.

In the On-the-Job Training Guide, in-school instruction is listed first; on-the-job suggestions to help employers assist the apprentice to prepare for in-school training are listed next.

The content of the training components is subject to change without notice.

INDUSTRIAL MECHANIC (MILLWRIGHT)

TASK MATRIX CHART

This chart outlines the major work activities, tasks and sub-tasks from the 2016 Industrial Mechanic (Millwright) Red Seal Occupational Standard. Each sub-task details the corresponding essential skill and level of training where the content is covered. *

* Sub-tasks with numbers in the boxes is where the content will be delivered in training.

A – Performs Common Occupational Skills

| | | | | | |
|--|---|--|---|--|--|
| A-1 Performs safety-related functions | 1.01 Uses personal protective equipment (PPE) and safety equipment 1, 2, 3, 4 | 1.02 Maintains safe worksite 1, 2, 3, 4 | 1.03 Protects the environment 1, 2, 3, 4 | 1.04 Performs lock-out/tag-out and zero-energy state procedures 1, 2, 3, 4 | |
| A-2 Uses tools and equipment | 2.01 Uses hand and portable power tools 1 | 2.02 Uses shop machines 1 | 2.03 Uses access equipment 1 | | |
| A-3 Performs routine trade tasks | 3.01 Plans work 1, 2, 3, 4 | 3.02 Fabricates work piece 1, 2, 3, 4 | 3.03 Lubricates systems and components 1, 2, 3, 4 | 3.04 Performs leveling of components and systems 1, 2, 3, 4 | 3.05 Uses fastening and retaining devices 1, 2, 3, 4 |
| | 3.06 Performs material identification 1, 2, 3, 4 | 3.07 Performs heat treatment of metal 1, 2, 3, 4 | 3.08 Uses mechanical drawings and schematics 1, 2, 3, 4 | | |
| A-4 Uses communication and mentoring techniques | 4.01 Uses communication techniques 1 | 4.02 Uses mentoring techniques 4 | | | |

| | | | | | |
|--|---|--|--|---|---|
| A-5 Performs measuring and layout | 5.01 Prepares work area, tools and materials 1 | 5.02 Measures material and components 1 | 5.03 Lays out components 1 (2, 3, 4 in context) | 5.04 Maintains precision measuring and layout tools 1 | |
| A-6 Performs cutting and welding operations | 6.01 Cuts material with oxy-fuel and plasma arc equipment 1 (2 in context) | 6.02 Joins material using oxy-fuel welding equipment 1 (2 in context) | 6.03 Welds material using shielded metal arc welding (SMAW) equipment 1, 2 | 6.04 Welds material with gas metal arc welding (GMAW) equipment 2 | 6.05 Welds material with gas tungsten arc welding (GTAW) equipment (NOT COMMON CORE)* 2 |
| | 6.06 Maintains welding equipment 1 (2 in context) | | | | |

*Subtask 6.05 is not consistently performed by IMMIs across Canada; therefore this content is deemed not common core and will not be assessed on the IMM certification examination.

B – Performs Rigging, Hoisting/Lifting and Moving

| | | | | |
|---|--|--|--|--|
| B-7 Plans rigging, hoisting/lifting and moving | 7.01 Determines load 1, 2, 3, 4 | 7.02 Selects rigging equipment 1, 2, 3, 4 | 7.03 Selects hoisting/lifting and moving equipment 1, 2, 3, 4 | 7.04 Secures area 1, 2, 3, 4 |
| B-8 Rigs, hoists/lifts and moves load | 8.01 Sets up rigging, hoisting/lifting and moving equipment 1, 2, 3, 4 | 8.02 Performs hoist/lift and move 1, 2, 3, 4 | 8.03 Maintains rigging, hoisting/lifting and moving equipment 1, 2, 3, 4 | |

C – Services Mechanical Power Transmission Components and Systems

| | | | | |
|---|---|--|--|--|
| C-9 Services prime movers | 9.01 Installs prime movers 4 | 9.02 Diagnoses prime movers 4 | 9.03 Maintains prime movers 4 | 9.04 Repairs prime movers 4 |
| C-10 Services shafts, bearings and seals | 10.01 Installs shafts, bearings and seals 2 | 10.02 Diagnoses shafts, bearings and seals 2 | 10.03 Maintains shafts, bearings and seals 2 | 10.04 Repairs shafts, bearings and seals 2 |
| C-11 Services couplings, clutches and brakes | 11.01 Installs couplings, clutches and brakes 2 | 11.02 Diagnoses couplings, clutches and brakes 2 | 11.03 Maintains couplings, clutches and brakes 2 | 11.04 Repairs couplings, clutches and brakes 2 |
| C-12 Services chain and belt drive systems | 12.01 Installs chain and belt drive systems 2 | 12.02 Diagnoses chain and belt drive systems 2 | 12.03 Maintains chain and belt drive systems 2 | 12.04 Repairs chain and belt drive systems 2 |
| C-13 Services gear systems | 13.01 Installs gear systems 2 | 13.02 Diagnoses gear systems 2 | 13.03 Maintains gear systems 2 | 13.04 Repairs gear systems 2 |
| C-14 Performs shaft alignment procedures | 14.01 Performs rough alignment 2 | 14.02 Performs dial alignment 2, 3 | 14.03 Performs laser alignment 3 | |

D – Services Material Handling/Process Systems

| | | | | | |
|---|---|--|--|--|--|
| D-15 Services robotics and automated equipment | 15.01 Installs robotics and automated equipment 4 | 15.02 Diagnoses robotics and automated equipment 4 | 15.03 Maintains robotics and automated equipment 4 | 15.04 Repairs robotics and automated equipment 4 | |
| D-16 Services fans and blowers | 16.01 Installs fans and blowers 3 | 16.02 Diagnoses fans and blowers 3 | 16.03 Maintains fans and blowers 3 | 16.04 Repairs fans and blowers 3 | |
| D-17 Services pumps | 17.01 Installs pumps 3 | 17.02 Diagnoses pumps 3 | 17.03 Maintains pumps 3 | 17.04 Repairs pumps 3 | |
| D-18 Services compressors | 18.01 Installs compressors 3 | 18.02 Diagnoses compressors 3 | 18.03 Maintains compressors 3 | 18.04 Repairs compressors 3 | |
| D-19 Services process piping, tanks and containers | 19.01 Installs process tanks and containers 3 | 19.02 Installs process piping 3 | 19.03 Diagnoses process tanks and containers 3 | 19.04 Diagnoses process piping 3 | 19.05 Maintains process tanks and containers 3 |
| | D-19.06 Maintains process piping 3 | D-19.07 Repairs process tanks and containers 3 | D-19.08 Repairs process piping 3 | | |
| | | | | | |
| D-20 Services conveying systems | 20.01 Installs conveying systems 4 | 20.02 Diagnoses conveying systems 4 | 20.03 Maintains conveying systems 4 | 20.04 Repairs conveying systems 4 | |

E – Services Fluid Power Systems

| | | | | |
|---|---|--|--|--|
| E-21 Services hydraulic systems | 21.01 Installs hydraulic systems 3 | 21.02 Diagnoses hydraulic systems 3 | 21.03 Maintains hydraulic systems 3 | 21.04 Repairs hydraulic systems 3 |
| E-22 Services pneumatic and vacuum systems | 22.01 Installs pneumatic and vacuum systems 3 | 22.02 Diagnoses pneumatic and vacuum systems 3 | 22.03 Maintains pneumatic and vacuum systems 3 | 22.04 Repairs pneumatic and vacuum systems 3 |

F – Performs Preventative and Predictive Maintenance, Commissioning and Decommissioning

| | | | | | |
|--|--|--|---|---|--|
| F-23 Performs preventative and predictive maintenance | 23.01 Performs preventative maintenance activities 4 | 23.02 Performs vibration analysis procedures 4 | 23.03 Performs balancing procedures 4 | 23.04 Performs non-destructive testing (NDT) procedures 4 | 23.05 Performs fluid analysis procedures 4 |
| | 23.06 Performs predictive maintenance activities 4 | | | | |
| F-24 Commissions and decommissions equipment | 24.01 Commissions systems and components 4 | 24.02 Decommissions systems and components 4 | | | |

TRAINING PROFILE CHART

This Training Profile Chart represents Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training at the topic level.

| Level One | Transcript Code | Hours |
|---|-------------------|-------|
| Layout & Hand Cut Tools | TOOL 110 - Theory | 11 |
| | TOOL 111 - Shop | 15 |
| Drills & Abrasives | TOOL 152 - Theory | 11 |
| | TOOL 153 - Shop | 15 |
| Metallurgy | METL 102 - Theory | 15 |
| | METL 103 - Shop | 11 |
| Precision Measuring; Assembly Tools; Fasteners; Threading | MEAS 102 - Theory | 22 |
| | MEAS 103 - Shop | 30 |
| Thermal Cutting, Oxy-Fuel and Arc Welding | WLDR 104 - Theory | 10 |
| | WLDR 105 - Shop | 16 |
| Rigging, Hoisting, and Lifting | RIGG 101 - Theory | 15 |
| | RIGG 102 - Shop | 11 |
| Safety & Communication | SAFE 100 - Theory | 11 |
| | SAFE 101 - Shop | 15 |
| Technical Drawing | PRNT 102 | 16 |
| Trade Mathematics | MATH 108 | 16 |
| | | 240 |

| Level Two | Transcript Code | Hours |
|---|-------------------|-------|
| Shafts, Keys, Seals, Bearing and Plain Bearings | TRNM 208 - Theory | 26 |
| | TRNM 209 - Shop | 26 |
| Lubrication & Levelling | MCHN 200 - Theory | 13 |
| | MCHN 201 - Shop | 13 |
| Arc Welding | WLDR 200 - Theory | 26 |
| | WLDR 201 - Shop | 26 |
| Belts and Chains | INDM 206 - Theory | 13 |
| | INDM 207 - Shop | 13 |
| Gear Systems, Couplings, Clutches, & Brakes | BRAK 208 - Theory | 13 |
| | BRAK 209 - Shop | 13 |
| Rough Alignment and Dial Alignment | ALGN 200 - Theory | 13 |
| | ALGN 201 - Shop | 13 |
| Technical Drawing | PRNT 203 | 16 |
| Trade Mathematics | MATH 201 | 16 |
| | | 240 |

| Level Three | Transcript Code | Hours |
|---|-------------------|-------|
| Advanced Shaft Alignment | ALGN 300 - Theory | 13 |
| | ALGN 301 - Shop | 13 |
| Pipe Fitting, Tanks and Containers | PIPE 300 - Theory | 13 |
| | PIPE 301 - Shop | 13 |
| Pneumatics, Compressors, Vacuum Systems, Fans and Blowers | PNEU 300 - Theory | 26 |
| | PNEU 301 - Shop | 26 |
| Pumps | PUMP 300 - Theory | 26 |
| | PUMP 301 - Shop | 26 |
| Hydraulics | HYDR 302 - Theory | 26 |
| | HYDR 303 - Shop | 26 |
| Technical Drawing | PRNT 302 | 16 |
| Trade Mathematics | MATH 300 | 16 |
| | | 240 |

| Level Four | Transcript Code | Hours |
|---|-------------------|-------|
| Robotics and Automated | ROBT 400 - Theory | 13 |
| | ROBT 401 - Shop | 13 |
| Machine Installation | MCHN 400 - Theory | 13 |
| | MCHN 401 - Shop | 13 |
| Material Handling | MATE 400 - Theory | 13 |
| | MATE 401 - Shop | 13 |
| Mentoring Techniques, Commissioning & Decommissioning Equipment | MENT 402 - Theory | 13 |
| | MENT 403 - Shop | 13 |
| Machine Shop | MACH 400 - Theory | 26 |
| | MACH 401 - Shop | 26 |
| Steam/Prime/Preventative Maintenance | MAIN 400 - Theory | 26 |
| | MAIN 401 - Shop | 26 |
| Technical Drawing | PRNT 405 | 16 |
| Trade Mathematics | MATH 400 | 16 |
| | | 240 |

Exceed Topics

Throughout this guide to course content there are topics, which exceed the scope of work set out by the Industrial Mechanic (Millwright) RSOS. Industry in Saskatchewan has deemed certain topics to fall within the scope of work of the Industrial Mechanic (Millwright) trade and therefore require technical training to also cover these topics.

ON-THE-JOB AND IN-SCHOOL TRAINING CONTENT FOR THE INDUSTRIAL MECHANIC (MILLWRIGHT) TRADE

This chart outlines on-the-job examples for apprentices to achieve relevant work experience to prepare for the topics of technical training. Topics of technical training are provided with the associated learning outcomes.

| Level One | 8 weeks | 240 hours |
|---|----------------|------------------|
| Layout & Hand Cut Tools | | 26 hours |
| <ul style="list-style-type: none">• describe types of hand cutting tools• describe use of hand cutting tools• describe use for layout tools• construct projects with hand cutting tools• maintain hand cutting tools• construct projects with the use of layout tools | | |
| Mentors can assist the apprentice to prepare for this section of technical training by: | | |
| <ul style="list-style-type: none">• <i>scheduling work in tool crib or storeroom if available</i>• <i>having apprentice work alongside journeyman to lay out and fabricate workpiece, i.e. motor base</i>• <i>explaining use of tools, including safe use and maintenance</i> | | |
| Drills & Abrasives | | 26 hours |
| <ul style="list-style-type: none">• identify types of power tools• describe use of power tools• construct projects with power tools• maintain power tools | | |
| Mentors can assist the apprentice to prepare for this section of technical training by: | | |
| <ul style="list-style-type: none">• <i>explaining the operation of power tools, including safe operation and maintenance</i> | | |
| Metallurgy | | 26 hours |
| <ul style="list-style-type: none">• describe metallurgy of ferrous and non-ferrous metals• identify steel manufacturing• identify soldering methods• identify destructive and non-destructive testing methods• construct tools made from steel• identify types of ferrous and non-ferrous metals• perform destructive and non-destructive testing methods• perform soldering methods | | |

Mentors can assist the apprentice to prepare for this section of technical training by:

- *demonstrating recognition of ferrous and non-ferrous materials and methods of identification*
- *explaining the effects of temperature on metal*
- *discussing hardening, annealing and tempering of metals*
- *provide hands-on training in hard soldering*

Thermal Cutting, Oxy-Fuel and Arc Welding

26 hours

- describe the safe operation, assembly, and maintenance of OFC, OFW, PAC and TB
- identify safe operation, assembly and maintenance of GMAW and GTAW
- describe the safe operation of fabrication equipment
- demonstrate the safe operation, assembly and maintenance during OFC and AC
- demonstrate the safe operation, assembly, and maintenance while OFW
- demonstrate the safe operation, assembly, and maintenance while TB

Mentors can assist the apprentice to prepare for this section of technical training by:

- *provide training in the storage and handling of compressed gases and associated equipment*
- *explaining selection of brazing and filler rods*
- *providing hands-on training in cutting and brazing*
- *providing hands-on training in GTAW and GMAW welding techniques*

Rigging, Hoisting, and Lifting

26 hours

- identify rigging equipment
- describe rigging techniques
- interpret OH&S Regulations
- apply rigging techniques
- maintain rigging equipment
- calculate load estimation

Mentors can assist the apprentice to prepare for this section of technical training by:

- *assisting apprentice in identifying weights of a variety of materials*
- *identifying the selection and capacity of slings and other lifting hardware*
- *trainings in hand signals*
- *offering required crane and hoist training as per OH&S requirements*

Safety & Communication Techniques

26 hours

- identify Occupation Health and Safety (OH&S) Regulations
- interpret OH&S Regulations
- describe WHMIS 2015 (GHS) procedures
- describe fire safety
- describe the importance of using effective verbal and non-verbal communication with people in the workplace
- demonstrate knowledge of trade terminology
- demonstrate knowledge of effective communication practices

Mentors can assist the apprentice to prepare for this section of technical training by:

- *explaining safety hazards found in the workplace*
- *providing necessary PPE and explain how to use it properly*
- *offering training such as fall arrest and mobile equipment training as per OH&S requirements*
- *involving apprentice in hazard assessments*

Technical Drawing**16 hours**

- develop working sketches
- develop working drawings from sketches
- construct parts and assembly from working drawings

Mentors can assist the apprentice to prepare for this section of technical training by:

- *training in basic on the job reading of blueprints to obtain proper information*
-

Trade Mathematics**16 hours**

- use basic Mathematics
- use basic Algebra
- perform trade calculations

Mentors can assist the apprentice to prepare for this section of technical training by:

- *allowing the apprentice supervised training in on-the-job calculations*
-

Level Two

8 weeks

240 hours

Shafts, Keys, Seals, Bearing and Plain Bearings

52 hours

- seal selection and maintenance
- shafting selection and attachments
- anti-friction bearings selection and maintenance
- plain bearings selection and maintenance

Mentors can assist the apprentice to prepare for this section of technical training by:

- *training in bearing selection for the job specific applications including fixed and floating bearings*
 - *identifying causes of bearing failure including the effects of lubrication on bearing life*
 - *training in bearing adjustment including fits and tolerances*
 - *providing training in basic identification and installation of static and dynamic seal types, application and fits and tolerances*
 - *training in shaft selection for the job specific application including related attachments*
-

Lubrication and Levelling

26 hours

- lubricant selection and application
- lubrication system maintenance
- levelling method selection
- levelling procedures

Mentors can assist the apprentice to prepare for this section of technical training by:

- *explaining selection and identification of lubricants*
 - *identifying types of lubrication systems: splash, bath, mist, etc.*
 - *explaining effects of over and under lubrication, including overheating and other equipment damage*
 - *identifying level types including optical and manual*
 - *training in the use of optical and laser levels where available*
-

Arc Welding

52 hours

- safe operation, setup and maintenance of GMAW and SMAW processes
- select the appropriate voltage and shielding gas, flow rate and type of transfer while performing GMAW
- select the appropriate amperage and electrode while performing SMAW
- demonstrate the appropriate techniques of GMAW and SMAW

Mentors can assist the apprentice to prepare for this section of technical training by:

- *training in selection of rods and manipulation techniques*
 - *providing hands-on training in GMAW and SMAW welding where available*
-

Belts and Chains**26 hours**

- assemble and maintain V-belt drives
- assemble and maintain chain drives

Mentors can assist the apprentice to prepare for this section of technical training by:

- *identifying types and demonstrating installation, tensioning and alignment of belts and chains*
 - *explaining proper lubrication of chains*
-

Gear Systems, Couplings, Clutches and Brakes**26 hours**

- describe and maintain direct drive couplings, clutches and brakes
- describe and maintain gear drive systems

Mentors can assist the apprentice to prepare for this section of technical training by:

- *demonstrating gear installation and fit, including clearances and backlash*
 - *explaining proper lubrication of gears*
 - *demonstrating coupling installation, fit and selection*
 - *demonstrating clutch installation, fit and selection*
 - *demonstrating brake installation, fit and selection*
 - *explaining maintenance required for gears, couplings, clutches and brake systems*
-

Rough Alignment and Dial Alignment**26 hours**

- identify alignment procedures, tools and current technology
- identify rim and face method of shaft alignment
- demonstrate feeler gauge alignment
- perform rim and face alignment

Mentors can assist the apprentice to prepare for this section of technical training by:

- *training and exposure to various types of alignment*
-

Trade Math**16 hours**

- basic algebra
- metric units
- trade calculations

Mentors can assist the apprentice to prepare for this section of technical training by:

- *allowing the apprentice supervised training in on-the-job calculations*
-

Technical Drawing**16 Hours**

- construct machine drawings
- interpret machine drawings
- interpret assembly drawings

Mentors can assist the apprentice to prepare for this section of technical training by:

- *training in on the job reading of blueprints to obtain proper information*
-

Level Three

8 weeks

240 hours

Advanced Shaft Alignment

26 hours

- identify and apply cross dialing method
- identify and apply laser method

Mentors can assist the apprentice to prepare for this section of technical training by:

- *providing a demonstration of the sequence of steps in shaft alignment*
 - *identifying couplings types and demonstrating installation*
 - *emphasizing the importance of coupling alignment*
 - *providing a demonstration on laser alignment*
 - *training in proper techniques of dial indicator set-up and reading*
-

Pipe Fitting, Tanks and Containers

26 hours

- theory and piping systems
- system components
- piping systems construction

Mentors can assist the apprentice to prepare for this section of technical training by:

- *identifying components in piping systems*
 - *explaining application of valves*
 - *identifying the different kinds of tanks and containers, along with the components that are used*
-

Pneumatics, Compressors, Vacuum Systems, Fan and Blowers

52 hours

- describe pneumatic theory
- identify system components
- identify schematics
- identify pneumatics circuits
- identify troubleshooting techniques
- construct pneumatic circuits
- test pneumatic circuits
- demonstrate troubleshooting techniques
- maintain pneumatic system components and actuators

Mentors can assist the apprentice to prepare for this section of technical training by:

- *demonstrating theory, safety and maintenance of pneumatic systems and components*
 - *providing instruction on the operation of compressors and vacuum systems*
 - *training in the repair and maintenance of compressors, vacuum systems, fans and blowers*
-

Pumps

52 hours

- pump theory and systems
- system components
- pump types and components
- pump and circuit testing, pump maintenance

Mentors can assist the apprentice to prepare for this section of technical training by:

- *identifying a variety of pumps used on the job*
- *identifying pump components and adjustments*
- *demonstrating packing selection, installation and adjustment*

Hydraulics

52 hours

- hydraulic theory
- hydraulic system components
- describe fluid, conductors and fittings
- identify schematics
- identify hydraulic circuits
- identify troubleshooting techniques

Mentors can assist the apprentice to prepare for this section of technical training by:

- *explaining hydraulic theory*
- *providing instruction on the different system components and fluids found in hydraulic systems*
- *demonstrating troubleshooting techniques*

Technical Drawing

16 hours

- location of surfaces, lines and points in orthographic drawings
- identification of internal surfaces in full sectional views
- arrow dimensioning and general tolerance data in orthographic views
- calculation of metric tolerances, allowances and limits for fits using charts

Mentors can assist the apprentice to prepare for this section of technical training by:

- *assisting in the interpretation of prints and drawings*

Trade Mathematics

16 hours

- basic geometry
- trade calculations

Mentors can assist the apprentice to prepare for this section of technical training by:

- *allowing the apprentice supervised training in on-the-job calculations*
-

Level Four

8 weeks

240 hours

Machine Installation

26 hours

- identify precision optical levels
- identify types of foundations and bases
- identify types of concrete forms and grouting
- identify types of machine installation hardware
- demonstrate field layout techniques

Mentors can assist the apprentice to prepare for this section of technical training by:

- *demonstrating the use of precision levels*
 - *explaining the different types of foundations and bases and where they would be used.*
 - *demonstrating field layout techniques*
 - *assisting the apprentice in completing layout of an installation*
-

Material Handling

26 hours

- conveyor system identification and maintenance
- conveyor components

Mentors can assist the apprentice to prepare for this section of technical training by:

- *exposure to a variety of conveying systems in the workplace if available*
 - *demonstrating the installation and repair of conveyor systems*
 - *assisting the apprentice in completing maintenance on a conveyor system*
-

Robotics and Automated Equipment

26 hours

- define terminology associated with robotics and automated equipment.
- describe safe work practices associated with robotics and automated equipment
- identify tools and equipment associated with robotics and automated equipment
- install robotics and automated equipment
- diagnose robotics and automated equipment
- maintain robotics and automated equipment
- repair robotics and automated equipment

Mentors can assist the apprentice to prepare for this section of technical training by:

- *involving the apprentice in the maintenance and repair of robotic equipment*
 - *explaining the set up and ongoing maintenance required for robotic equipment*
 - *explaining the safety considerations when working with robotic equipment*
-

Steam/Prime/Preventative Maintenance

52 hours

- prime mover identification
- power generation system identification
- preventative/predictive maintenance principles and methods
- advanced torque methods

Mentors can assist the apprentice to prepare for this section of technical training by:

- *training and exposure to the various types of prime mover systems*
 - *explaining maintenance considerations for prime movers*
 - *involving the apprentice in schedule maintenance and repair of prime movers*
 - *demonstrating advanced torque methods*
-

Mentoring Techniques, Commissioning & Decommissioning Equipment**26 hours**

- identify strategies for learning skills in the workplace
- identify strategies for mentoring in the workplace
- define terminology associated with commissioning and decommissioning
- demonstrate knowledge of strategies for mentoring in the workplace
- demonstrate knowledge of the procedures used to commission systems and components
- demonstrate knowledge of procedures used to decommission systems and components
- demonstrate knowledge of safety practices related to commissioning and decommissioning

Mentors can assist the apprentice to prepare for this section of technical training by:

- *explaining and demonstrating mentoring of an apprentice*
 - *involving the apprentice in the commissioning of new or repair equipment*
 - *involving the apprentice in the decommissioning of equipment*
-

Technical Drawing**16 hours**

- location of part features on orthographic view drawings
- review of engineering drawings with a variety of views
- dimension data and tolerance information from engineering drawings
- calculating tolerances and allowances from charts
- interpreting mechanical drawings

Mentors can assist the apprentice to prepare for this section of technical training by:

- *assisting in the interpretation of prints and drawings at an advanced level*
 - *demonstrating calculating tolerances and allowances from charts*
-

Machine Shop**52 hours**

- describe lathe components and accessories
- describe milling machine components and accessories
- describe cutting tools
- demonstrate lathe maintenance
- perform lathe operations
- demonstrate milling machine maintenance
- perform milling operations

Mentors can assist the apprentice to prepare for this section of technical training by:

- *assisting in the use of a lathe to create or repair a machine component*
 - *explaining the safety considerations when using machining equipment*
 - *explaining the use of a milling machine*
 - *demonstrating the use of machine shop tools*
-

Trade Mathematics**16 hours**

- basic geometry and trigonometry
- trade calculations

Mentors can assist the apprentice to prepare for this section of technical training by:

- *allowing the apprentice supervised training in on-the-job calculations*
-

Consider apprenticeship training as an investment in the future of your company and in the future of your workforce. Ultimately, skilled and certified workers increase your bottom line.

Get involved in the apprenticeship training system. Your commitment to training helps to maintain the integrity of the trade.

Do you have employees who have been working in the trade for a number of years but don't have trade certification? Contact your local apprenticeship office for details on how they might obtain the certification they need.

Saskatchewan Apprenticeship & Trade Certification Commission

2140 Hamilton St Regina SK S4P 2E3

Tel: (306) 787-2444

Fax: (306) 787-5105

Toll Free: 1-877-363-0536

web site: www.saskapprenticeship.ca

District Offices

Estevan (306) 637-4930

La Ronge (306) 425-4385

Moose Jaw (306) 694-3735

North Battleford (306) 446-7409

Prince Albert (306) 953-2632

Saskatoon (306) 933-8476

Swift Current (306) 778-8945

Yorkton (306) 786-1394