

**TRADE: MILLWRIGHT (INDUSTRIAL MECHANIC)
LEVEL / YEAR: ONE**

Apprenticeship Course Outline

(based on former ITAC curriculum)

% of HRS

Line	A Demonstrate Work Practices	30%
	Explain Federal/Provincial Occupational Health and Safety Regulations	
	Explain Environmental Regulations	
	Use Personal Protective Equipment	
	Maintain Safe Work Area	
	Describe Fire Prevention and Control	
	Identify Ergonomic Considerations	
	Use Communication and Team Skills	
	Interpret Plans and Sketches	
	Use Reference Resources	
Line	B DESCRIBE TRADE SCIENCE	28%
	Use Trade math	
	Describe Principles of Metallurgy	
	Use Fasteners	
Line	C USE TOOLS	30%
	Use Hand Tools	
	Use Measuring and Layout Tools and Instruments	
	Use Portable Power Tools	
	Use Fixed Shop Machines and Equipment	
	Use Mobile Equipment	
Line	E INSTALL EQUIPMENT	
	Use Safe Rigging Practices	
Line	F CUT, FIT AND FABRICATE	12%
	Describe Welding Practices	
	Use Oxy-Fuel Cutting and Welding	
	Use Shielded Metal Arc Welding (SMAW)	

**TRADE: MILLWRIGHT (INDUSTRIAL MECHANIC)
LEVEL / YEAR: TWO**

Apprenticeship Course Outline

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% of HRS

Line	B	DESCRIBE TRADE SCIENCE	22%
		Use Trade Math	
		Explain Simple Machines	
		Use Fits and Tolerances	
Line	D	SERVICE LUBRICANTS, SEALS AND BEARINGS	30%
		Select Lubricants	
		Maintain Lubricating Systems	
		Select Seals	
		Install and Maintain Seals	
		Select Bearings	
		Install and Maintain Bearings	
Line	E	INSTALL EQUIPMENT	48%
		Use Safe Rigging Practices	
		Describe Equipment Layout	
		Prepare Equipment Foundations	
		Explain Levelling and Alignment Procedures	
		Describe Methods of Securing Equipment	
Line	F	CUT, FIT AND FABRICATE	
		Use Shielded Metal Arc Welding (SMAW)	
		Use Gas Metal Arc Welding (GMAW)	
Line	H	SERVICE POWER TRANSMISSIONS	
		Service Drive Shafts	
Line	L	SERVICE MATERIAL HANDLING SYSTEMS	
		Explain Material Handling Theory	
		Identify Types of Conveyors	
		Describe Methods of Conveyor Loading and Unloading	
		Maintain Conveyor Systems	

100%

**TRADE: MILLWRIGHT (INDUSTRIAL MECHANIC)
LEVEL / YEAR: THREE**

Apprenticeship Course Outline

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% of HRS

Line	E	INSTALL EQUIPMENT	8%
		Explain Levelling and Alignment Procedures	
Line	H	SERVICE POWER TRANSMISSIONS	45%
		Describe Power Transmission Theory	
		Service Couplings	
		Service Gear Types	
		Service Belt Types	
		Service Clutches and Brakes	
		Service Chain Drives	
Line	I	SERVICE FLUID POWER	35%
		Explain Hydraulic Theory	
		Interpret Hydraulic Schematics	
		Describe Hydraulic Components	
		Identify Hydraulic Pumps	
		Assemble Hydraulic Circuits	
		Maintain and Troubleshoot Hydraulic Circuits	
Line	K	SERVICE PUMPS	16%
		Explain Pump Theory	
		Identify Types of Pumps	
		Maintain and Troubleshoot Positive Displacement Pumps	
		Maintain and Troubleshoot Non-Positive Displacement Pumps	

100%

**TRADE: MILLWRIGHT (INDUSTRIAL MECHANIC)
LEVEL / YEAR: FOUR**

Apprenticeship Course Outline

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% of HRS

Line	A USE WORK PRACTICES	
	Plan Job Requirements	
Line	B DESCRIBE TRADE SCIENCE	
	Describe Theory of Electricity and Electronics	
Line	E INSTALL EQUIPMENT	
	Describe Procedures for Commissioning Equipment	
Line	G MAINTAIN PRIME MOVERS	20
	Explain Prime Mover Theory	
	Describe Electric Motors	
	Maintain Electric Motors	
	Describe Internal Combustion Engines	
	Describe the Maintenance of Internal Combustion Engines	
	Describe Turbines	
	Describe the Maintenance of Turbines	
Line	H SERVICE POWER TRANSMISSIONS	
	Describe Power Turbines	
Line	I SERVICE FLUID POWER	20%
	Explain Pneumatic Theory	
	Describe Pneumatic Components	
	Interpret Pneumatic Schematics	
	Identify Pneumatic Pumps	
	Assemble Pneumatic Circuits	
	Maintain and Troubleshoot Pneumatic Circuits	
	Explain the Theory of Vacuum and Vacuum Systems	
	Interpret Vacuum Symbols	
	Identify Vacuum System Components	
	Describe Vacuum Systems	
	Maintain and Troubleshoot Vacuum Systems	
Line	J DESCRIBE COMPRESSORS	8%
	Explain Compressor Theory	
	Identify Types of Compressors	
	Describe Positive Displacement Compressor Theory	
	Describe Non-Positive Displacement Compressor Theory	
Line	L SERVICE MATERIAL HANDLING SYSTEMS	
	Maintain Fans and Blowers	
Line	M SERVICE HVAC AND POLLUTION CONTROL EQUIPMENT	
	Describe Theory of Pollution Control	
	Describe Different Methods of Pollution Control	

Maintain Pollution Control Equipment	
Describe Methods of Heating Ventilation and Air Conditioning (HVAC)	

Line	N	DESCRIBE OPERATIONAL EQUIPMENT EFFECTIVENESS	12%
		Describe Operational Equipment Effectiveness Processes	
		Create Problem Solving Flow Charts	
		Describe Theory of Maintenance Procedures	
		Describe Types of Maintenance	
		Describe Use of Predictive Maintenance Tools	
		Identify Equipment and Process Deficiencies	
		Perform Vibration Analysis and Rotating Equipment Balancing	

Due to the redevelopment of apprenticeships in BC course outlines are subject to change without notice. These course outlines are intended for use as an interim guide in the transition period.