

**TRADE: HEAVY DUTY MECHANIC
LEVEL / YEAR: ONE**

Apprenticeship Course Outline

(based on former ITAC curriculum)

Heavy Duty Mechanics - Year 1

- Service Advanced Hydraulic Systems
- Service Advance Hydraulic Brake Systems
- Service Hydraulic Anti-Lock Brake Systems
- Service Advanced Air Brake Systems
- Service Air Anti-Lock Brake Systems
- Service Comp Starters Controls & Accessories
- Service Advanced Steering Systems

Heavy Duty Mechanics - Year 2

- Service Diesel Engines
- Describe Alternate Fuel Systems
- Service Electrical Circuits
- Service Engine Support Systems

Heavy Duty Mechanics - Year 3

- Service Advanced Electrical Circuits
- Service Diesel Fuel Systems
- Service Electronic Diesel Fuel Systems
- Service Gas Fuel Injection Systems

Heavy Duty Mechanics - Year 4

- Service Clutches
- Service Standard Transmission & Drivelines
- Service Drive Axles & Final Drives
- Service TC, Powershift & AT Systems
- Service Vehicle Retarders
- Service Air Conditioning Systems

Line	A	USE SAFE WORK PRACTICES	
		Describe Applications of the Workers' Compensation Act in the Workplace	
		Describe General Safety Practices for Trade Areas	
		Use Safe Work Practices	

Line	B	DESCRIBE THE HEAVY DUTY MECHANICS TRADE	
		Describe the Heavy Duty Mechanics Trade	

Line	C	PROCESS TECHNICAL INFORMATION	
		Locate Parts and Service Information	
		Describe Methods of Record Keeping	

Write a Simple Report	
Use Basic Computer Skills	
Sketch Simple Objects Using Orthographic Projection	
Sketch Simple Objects in Isometric	
Sketch Simple Working Drawings	

Line	D	USE HAND TOOLS AND SHOP EQUIPMENT
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Use Hand Tools	
Use Shop Equipment	
Use Measuring Tools	

Line	E	LIFT LOADS
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Identify Material Handling Equipment	
Identify Material Handling Procedure	
Move Materials	

Line	F	USE FASTENINGS AND FITTINGS
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Use Fastening Devices	
Use Pipe, Tubing and Fittings	
Use Hoses and Fittings	

Line	G	CUT, WELD, BRAZE AND SOLDER METALS
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Identify Metals	
Identify Gases, Components and Component Handling Procedures for Oxy-Fue Cutting and Welding	
Assemble, Test, Light, Adjust, Shutdown and Disassemble a Portable Oxyacetylene Outfit	
Perform Cuts and Pierce Holes in Mild Steel Plate, Round Stock and Angle Iron	
Weld Mild Steel	
Braze Lap Joints	
Solder Tubing and Sheet Metal	
Describe the Shielded Metal Arc Welding Process and Its Applications	
Identify Shielded Metal Arc Welding Equipment and Its Operations	
Identify Mild Steel Electrodes for Shielded Metal Arc Welding	
Weld Mild Steel With Shielded Metal Arc	

Line	H	OPERATE POWERED EQUIPMENT
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Start, move and stop vehicles and equipment	
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Line	I	SERVICE WINCHES AND WORKING ATTACHMENTS
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Service Tractor Mounted Winches	
Service Hoist Winches	
Service Working Attachments	

Line	J	SERVICE BRAKE SYSTEMS
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Service Hydraulic Brakes	
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Service Air Brakes	

Line	K	SERVICE HYDRAULIC SYSTEMS
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Maintain Hydraulic Systems	
Service Hydraulic Pumps and Motors	
Service Hydraulic Valves	
Service Hydraulic Cylinders and Seals	
Service Hydraulic System Heat Exchangers and Accumulators	
Service Hydraulic Systems	

Line	L	OVERHAUL DIESEL ENGINES
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Describe the Theory of Internal Combustion Engines	
Diagnose Engine Problems	
Remove and Disassemble Engines	
Service Cylinder Blocks	
Service Cam Shafts and Components	
Service Crank Shafts and Components	
Service Pistons and Components	
Service Cylinder Heads and Components	
Service Engine, Brakes and Retarders	
Assemble, Adjust and Start Engines	

Line	M	SELECT LUBRICANTS AND FLUIDS
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Describe Fluids and Lubricants	
Describe Routine Maintenance Procedures	

Line	N	SERVICE ENGINE SUPPORT SYSTEMS
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Service Cooling Systems	
Service Lubrication Systems	
Service Air Induction And Exhaust Systems	

Line	O	SERVICE AIR CONDITIONING
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Service Air Conditioning System	
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Line	P	SERVICE GASOLINE AND ALTERNATE FUEL SYSTEMS
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Service Carbureted Gasoline Fuel Systems	
Service Alternate Fuel Systems	
Service Electronic Fuel Injection Systems	

Line	Q	SERVICE DIESEL FUEL SYSTEMS
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Service Basic Diesel Fuel Systems	
Service Hydraulic Fuel Injectors	
Describe the Operation of Governors	
Service Fuel Injection Systems	

Line	R	SERVICE ELECTRICAL AND ELECTRONIC SYSTEMS
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Describe the Basic Principles of Electricity	
Identify Common Electrical and Electronic Components	
Use Electrical Test Equipment	
Test and Service Batteries	
Service Starting Systems	
Service Charging Systems	
Service Ignition Systems	
Service Auxillary Electrical Systems	

Line	S	SERVICE DRIVE AXLES AND DRIVE LINES	
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Service Drive Axles	
Service Drive Lines	

Line	T	SERVICE STANDARD TRANSMISSION SYSTEMS	
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Describe Power Transmission	
Service Clutches	
Service Standard Transmissions	

Line	U	SERVICE AUTOMATIC AND POWERSHIFT TRANSMISSIONS	
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Service Torque Converters and Fluid Couplings	
Service Powershift and Automatic Transmissions	

Line	V	SERVICE BEARINGS AND SEALS	
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Service Bearings	
Service Seals	

Line	W	SERVICE TRACK TYPE EQUIPMENT	
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Service Track Type Undercarriage	
Service Track Machine Final Drives	
Service Track Machine Steering Systems	

Line	X	SERVICE WHEEL TYPE EQUIPMENT	
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Service Tires and Wheels	
Service Suspension Systems	
Service Steering Systems	
Service Steering Gear	
Service Wheel Machine Final Drives	

Line	Y	SERVICE PNEUMATIC SYSTEMS	
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Test and Service Pneumatic Systems	
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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.