

Heavy Equipment Technician OFF – ROAD ILM Pre-Study Package Drafted May 6, 2009

190101b	Lifting Procedures and Wire Rope
190101c	Materials and Fastening Devices
190101d	Hand, Shop and Power Tools
190101e	Measuring Tools
190101f	Oxy-Fuel Equipment, Heating and Cutting
190102a	Frame and Suspension Fundamentals
190102b	Frame and Suspension Service
190102c	Bearings and Seals
190102d	Wheels, Tires and Hubs
190102fA	Coupling Units and Landing Gear Fundamentals and Service - Part A
190102fB	Coupling Units and Landing Gear Fundamentals and Service - Part B
190102g	Orientation to Trailer Inspection
190102h	Preventive Maintenance
190103a	Hydraulic Brake System Fundamentals
190103b	Hydraulic Brake System (Drum and Disc)
190103c	Hydraulic Brake System Diagnosis and Service
190103d	Hydraulic Brake Booster System Fundamentals and Service
190103e	Parking Brake System Fundamentals and Service
190103f	Electric Brake Fundamentals and Service
190104a	Electrical Theory
190104b	Electrical Circuits
190104d	Test Equipment
190104e	Battery Fundamentals and Service
190104fA	Electrical Wiring, Lighting Circuits and Circuit Protection - Part A
190104fB	Electrical Wiring, Lighting Circuits and Circuit Protection - Part B
190104g	Basic Electronics
190104h	Electronic Control Systems
190105aA	Hydraulic Fundamentals - Part A
190105aB	Hydraulic Fundamentals - Part B

190105b	Hydraulic System Components: Reservoir, Filters, Hoses and Coolers
190105c	Hydraulic System Components: Pumps, Valves, Cylinders and Accumulators
190106a	Air Brake System Fundamentals
190106b	Air Brake System Mechanical Components
190106cA	Truck/Tractor Air Brake System Components - Part A
190106cB	Truck/Tractor Air Brake System Components - Part B
190106d	Trailer Air Brake System Components
190106e	Air Brake System Testing and Service
190201a	Engine Fundamentals
190201b	Engine Block and Cylinder Liner Fundamentals
190201c	Engine Block and Cylinder Liner Service
190201d	Piston, Piston Rings and Connecting Rod Fundamentals
190201e	Piston, Piston Rings and Connecting Rod Service
190201f	Crankshaft, Bearings and Related Component Fundamentals
190201g	Crankshaft, Bearings and Related Component Service
190201h	Camshaft and Follower Fundamentals
190201i	Camshaft and Follower Service
190201j	Cylinder Head Fundamentals
190201kA	Cylinder Head Service - Part A
190201kB	Cylinder Head Service - Part B
190201l	Engine Braking System Fundamentals and Service
190202a	Air Induction and Exhaust Systems
190202b	Turbocharged Air Systems
190202c	Lubrication Systems and Crankcase Ventilation
190202dA	Cooling Systems (Liquid and Air) - Part A
190202dB	Cooling Systems (Liquid and Air) - Part B
190203a	Diesel Fuel and Storage Tanks (Machine and Bulk Storage)
190203b	Combustion Process and Starting Aids
190203c	Basic Fuel Injection System
190203d	Fuel System Service
190203e	Port/Helix Metering Fuel Systems
190203f	Opposed Plunger Inlet Fuel Metering Systems
190203g	Diesel Fuel Injector Fundamentals and Service
190203h	Engine Governor Fundamentals and Service

190203i	Emergency Shutdown Systems
190204b	Electronically Controlled Fuel Injection Systems
190204c	Performance Analysis and Tune-Up
190205a	Charging System and Control Circuit Fundamentals
190205b	Charging System Testing and Service
190205c	Cranking System Fundamentals and Motor Drives
190205d	Cranking System Control Circuits
190205e	Cranking System Testing and Service
190205f	Non-Electric Cranking Systems
190301b	Hydraulic Pump Fundamentals
190301c	Hydraulic Pump Service
190301d	Hydraulic Actuator Fundamentals
190301e	Hydraulic Actuator Service
190301fA	Hydraulic Valves - Part A
190301fB	Hydraulic Valves - Part B
190301g	Hydraulic Systems Types
190301h	Hydraulic System Testing and Service
190301i	Electrohydraulics
190302b	Suspension System Fundamentals and Service
190302cA	Off-Road Equipment Accessories and Attachments - Part A
190302cB	Off-Road Equipment Accessories and Attachments - Part B
190302d	Off-Road Electrical Circuit Fundamentals
190302e	Off-Road Electrical Circuit Service
190303a	Gearing Principles
190303b	Torque Converter Fundamentals and Service
190303c	Powershift and Automatic Transmission Mechanical/Electronic Components
190303d	Powershift and Automatic Transmission Control and Shifting
190303e	Hydraulic Retarder Fundamentals
190303f	Powershift and Automatic Transmission Testing and Service
190303gA	Tracked Equipment Steering Fundamentals and Service - Part A
190303gB	Tracked Equipment Steering Fundamentals and Service - Part B
190303h	Undercarriage Systems Fundamentals and Service
190303i	Final Drive Fundamentals and Service (Off-Road)
190303jA	Drive Axle and Carrier Fundamentals and Service (Off-Road) - Part A

190303jB	Drive Axle and Carrier Fundamentals and Service (Off-Road) - Part B
190303k	Clutch Fundamentals and Service (Off Road)
190401a	Clutch Fundamentals and Service (On Road)
190401b	Driveline Fundamentals and Service
190401c	Gearing Principles
190401dA	Transmission Fundamentals - Part A
190401dB	Transmission Fundamentals - Part B
190401e	Transmission Shifting
190401f	Transmission Service
190401g	Transfer Case and Auxiliary Drives
190402a	Steering Fundamentals
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190402c	Steering Angles and Alignment
190403a	Air Conditioning Fundamentals
190403b	HVAC Control Systems (Heating, Ventilation and Air Conditioning)
190403cA	Air Conditioning Testing and Service - Part A
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190405a	Truck Electrical Circuit Fundamentals
190405b	Truck Electrical Circuit Service
190405c	Failure and Fluid Analysis
190405d	Orientation to Vehicle Inspection

PLUS

Automotive Service Technician Modules

090102b	Gas Metal Arc Welding (GMAW) (MIG Welding)
090302a	Fuel Properties
090302b	Combustion & Exhaust Emissions
090302c	Exhaust Gas Analysis
090303a	Ignition System Fundamentals
090303b	Distributor Ignition Systems
090303c	Electronic Ignition Systems
090303d	Ignition System Diagnosis and Service
A090305a	Ignition System Fundamentals

- 090304a Fuel Tanks & Supply Systems
- 090304b Gasoline Fuel Injection System Fundamentals
- 090304c Gasoline Electronic Fuel Injection Systems
- 090304d Gasoline Fuel Injection system Diagnosis and Service

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Millwright Modules

- 160109aA Rigging Procedures – Part A
- 160109aB Rigging Procedures – Part B
- 160109aC Rigging Procedures – Part C
- 160109b Cranes and Hoists
- 160301h Pneumatic Systems
- 160311a Hydraulic and Pneumatic Systems
- 160205aA Compressor Fundamentals – Part A
- 160205aB Compressor Fundamentals – Part B
- 160205bA Repair of Compressor Stationary Components – Part A
- 160205bB Repair of Compressor Stationary Components – Part B
- 160205cA Repair of Compressor Moving Components – Part A
- 160205cB Repair of Compressor Moving Components – Part B
- 160205d Repair of Compressor Valves and Gas Sealing
- 160205e Compressor Servicing
- 160205f Compressor Overhaul and Start-Up Procedures

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Welder Modules

- 120101b Safety Guidelines