

HEAVY MECHANICAL TECHNICIAN (HMTD)

HMTD 1101 Credits: 1

Workplace Safety & Prep Skills Total Hours: 25

This course introduces students to the concept of safe work practices, occupational health and safety, environmental practices, math, science, and electronic media.

HMTD 1102 Credits: 1

Oxy-Acetylene Welding & Cutt Total Hours: 25

This course introduces students to metals, oxy-acetylene components and equipment, cutting, welding, brazing, and soldering.

HMTD 1103 Credits: 1

Electric Welding & Cutting Total Hours: 25

This course introduces students to the Shielded Metal Arc Welding (SMAW) process, SMAW equipment, mild steel welding with SMAW, mild steel welding wire feed processes, and air arc gouging.

HMTD 1104 Credits: 1

HMT Tools & Equipment 1 Total Hours: 25

This course introduces students to the use of protective equipment, lock out procedures, and hand tools.

HMTD 1105 Credits: 1

HMT Tools & Equipment 2 Total Hours: 25

This course introduces students to the use of measuring instruments, power tools, drill bits, and shop equipment.

HMTD 1106 Credits: 1

Fittings & Fasteners Total Hours: 25

This course introduces students to imperial and metric fasteners, internal and external threads, tubing, pipe and fittings, and hose and hose fittings.

HMTD 1107 Credits: 1

Truck & Machine Operation 1 Total Hours: 25

This course introduces students to pre-start and walk around inspections, starting aids, start up procedures, emergency shutdown procedures, and lock-out procedures for trucks and heavy duty equipment.

HMTD 1108 Credits: 1

Truck & Machine Operation 2 Total Hours: 25

This course introduces students to pre-start and walk around inspections, start up procedures, emergency shutdown procedures, start, operate, shut down of forklift, and forklift certification (optional).

HMTD 1109 Credits: 1

Lubricants & Bearings Total Hours: 25

This course introduces students to lubricant identification, use and service procedures (including grease job), bearings, and seals.

HMTD 1110 Credits: 1

Math, Physi & Worksafe Req HMT Total Hours: 25

Wire rope, lift, and support loads. This course introduces students to math and physics for heavy mechanical trades, load supporting and lifting, and servicing winch wire rope.

HMTD 1111 Credits: 1

Final Drives & Undercarriage 1 Total Hours: 25

This course uses the principals of load supporting and lifting for the removal of track machine undercarriages and final drives.

HMTD 1112 Credits: 1

Final Drives & Undercarriage 2 Total Hours: 25

This course uses the principals of load supporting and lifting for the installation of track machine undercarriages, service of final drives, and installation of final drives.

HMTD 1113 Credits: 1

Frames & Suspension Total Hours: 25

This course introduces students to frame types, and the diagnosis and repair of frames and suspension.

HMTD 1114 Credits: 1

Tires, Wheels & Hubs Total Hours: 25

This course introduces students to the service and diagnosis of wheels, tires, and hubs.

HMTD 1115 Credits: 1

Workplace Skills 1 Total Hours: 25

This course has students review the concepts of safe work practices, occupational health & safety, environmental practices, electronic media, vocabulary and pronunciation specific to the field of heavy mechanical trades. It provides an introduction to the heavy mechanical repair industry and to the language and communication skills required for success as a technician. Reading, writing, and interactive communication (listening & speaking) skills are practiced in conjunction with topics from the heavy mechanical trades curriculum. Interpersonal and conversational skills are enhanced while working in a shop setting. Sociocultural competencies appropriate to the Canadian workplace will be introduced and practiced.

HMTD 1201 Credits: 1

Hydraulic Systems 1 Total Hours: 25

Basic Theory. This course introduces students to the principles of hydraulics, hydraulics safety, and basic operation of hydraulic systems.

HMTD 1202 Credits: 1

Hydraulic Systems 2 Total Hours: 25

Advanced Theory and Identification. This course introduces students to various types of hydraulic systems, schematics, and components.

HMTD 1203 Credits: 1

Hydraulic Systems 3 Total Hours: 25

Service. This course introduces the students to performing scheduled maintenance of hydraulic systems, hydraulic fluids and hydraulic hoses and fittings.

HMTD 1204 Credits: 1

Hydraulic Systems 4 Total Hours: 25

Diagnose and Repair. This course introduces students to hydraulic systems diagnosis and repair.

HMTD 1205 Credits: 1

Electrical Systems 1 Total Hours: 25

Terminology, Concepts, Calculations, and Magnetic Theory. This course introduces students to electrical terminology, basic theory, concepts, circuit calculations, and magnetic theory.

HMTD 1206 Credits: 1

Electrical Systems 2 Total Hours: 25

Components, Wiring Diagrams, and Symbols. This course introduces students to electrical components, wiring diagrams, and symbols.

HMTD 1207 Credits: 1

Electrical Systems 3 Total Hours: 25

Electrical Test Instruments and Batteries. This course introduces students to the use of electrical test instruments and diagnosis of electrical systems.

HMTD 1208 Credits: 1

Electrical Systems 4 Total Hours: 25

Starting Systems 1: Theory and Service. This course introduces students to basic starting system service.

HMTD 1209 Credits: 1

Electrical Systems 5 Total Hours: 25

Charging Systems 1: Theory and Service. This course introduces students to basic charging system service.

HMTD 1210 Credits: 1

Electrical Systems 6 Total Hours: 25

Basic Electrical Circuit: Service. This course introduces students to basic electrical circuit service.

HMTD 1211 Credits: 1

Electrical Systems 7 Total Hours: 25

Basic Electrical Circuit: Diagnose and Repair. This course introduces students to troubleshooting procedures, diagnosis, and repair of electrical circuits and systems.

HMTD 1212 Credits: 1

Shop Simulation 1 Total Hours: 25

This course introduces students to simulated work in a heavy mechanical shop.

HMTD 1213 Credits: 1

Steering Systems 1 Total Hours: 25

Truck Steering. This course introduces students to truck steering systems theory, service, diagnosis, and repair.

HMTD 1214 Credits: 1

Steering Systems 2 Total Hours: 25

Machine Steering. This course introduces students to wheeled and track type equipment steering theory, service, diagnosis, and repair.

HMTD 1215 Credits: 1

Workplace Skills 2 Total Hours: 25

This course advances the learners vocabulary and pronunciation specific to the heavy mechanical industry. It also provides the opportunity to practice more complex language and communication skills required for teamwork and professionalism such as problem-solving and conflict resolution. Using an experiential learning approach with focus on role-rehearsals and coaching, this course will provide learners with the opportunity to work independently and in a cooperative team environment. Learners will practice communication strategies like: clarifying and confirming understanding of client services, following instructions, troubleshooting and problem-solving to a higher level.

HMTD 2101 Credits: 1

Cab & Protective Structures Total Hours: 25

This course introduces students to cab and protective structures.

HMTD 2102 Credits: 1

Hydraulic Brake Systems 1 Total Hours: 25

Theory and Service. This course introduces students to hydraulic brake systems with a focus on the principles of system operation leading into basic system service procedures.

HMTD 2103 Credits: 1

Hydraulic Brake Systems 2 Total Hours: 25

Diagnose and Repair. This course introduces students to hydraulic brake system service.

HMTD 2104 Credits: 1

Hydraulic Brake Systems 3 Total Hours: 25

Antilock Braking, Stability Control Systems, and Power Boosters. This course Introduces the students to various styles of power assisted hydraulic brake systems and hydraulic anti-lock/stability control braking systems.

HMTD 2105 Credits: 1

Air Brake Systems 1 Total Hours: 25

Theory and Service. This course introduces students to air brake systems principles of operation as well as basic service procedures.

HMTD 2106 Credits: 1

Air Brake Systems 2 Total Hours: 25

Inspection and Repair. This course introduces students to the procedures for inspection and repair of air brake systems.

HMTD 2107 Credits: 1

Air Brake Systems 3 Total Hours: 25

Pneumatic Anti-lock Braking and Stability Control Systems. This course introduces students to basic pneumatic air brake system troubleshooting and pneumatic anti-lock brake and stability systems.

HMTD 2108 Credits: 1

Cab Heat, Vent & Air Cond Syst Total Hours: 25

This course introduces students to (HVAC) Heating, Ventilation, and Air Conditioning systems.

HMTD 2109 Credits: 1

Ref Unit Heat Vent & Air Cond Total Hours: 25

This course introduces students to trailer and service body heating and refrigeration systems.

HMTD 2110 Credits: 1

Trailers 1 Total Hours: 25

Landing Gear and Couplers. This course introduces students to trailer accessories such as landing gear, winches, hitches, and couplers.

HMTD 2111 Credits: 1

Trailers 2 Total Hours: 25

Body Components and Lift Gates. This course introduces students to trailer body components and lift gates.

HMTD 2112 Credits: 1

Powertrain 1 Total Hours: 25

Engine Support Systems 1: Cooling and Lubrication. This course introduces students to the theory of diesel engine operation, cooling and lubrication systems maintenance, and engine removal preparation.

HMTD 2113 Credits: 1

Powertrain 2 Total Hours: 25

Engine Support Systems 2: Intake and Exhaust. This course introduces students to intake and exhaust systems maintenance, and engine removal procedures.

HMTD 2114 Credits: 1

Powertrain 3 Total Hours: 25

Engine Fuel Systems: Remove and Install. This course introduces students to diesel engine fuel supply systems maintenance and diesel engine installation procedures.

HMTD 2115 Credits: 1

Powertrain 4 Total Hours: 25

Manual Transmissions and Clutches: Theory, Diagnose, Remove, and Install. This course introduces students to manual and automated manual transmissions and clutches.

HMTD 2201 Credits: 1**Powertrain 5 Total Hours: 25**

Automatic Transmissions and Torque Converters: Theory, Diagnose, Remove, and Install. This course introduces students to automatic and powershift transmissions as well as torque converters and torque dividers.

HMTD 2202 Credits: 1**Powertrain 6 Total Hours: 25**

Driveline and Drive Axles: Theory, Diagnose, Remove, and Install. This course introduces students to driveline and drive axle systems.

HMTD 2203 Credits: 1**Powertrain 7 Total Hours: 25**

Differentials and Internal Traction Control Devices: Theory, Diagnose, Remove, and Install. This course introduces students to differential systems and internal traction control devices (lockers).

HMTD 2204 Credits: 1**Powertrain 8 Total Hours: 25**

Return to Service: Inspection and Run-up. This course introduces the students to start and run-up procedures, monitoring, diagnostics, and inspection before placing unit into service.

HMTD 2205 Credits: 1**Electrical Systems 8 Total Hours: 25**

Starting Systems 2: Diagnose and Repair. This course introduces students to starting systems circuit and component diagnosis and repair.

HMTD 2206 Credits: 1**Electrical Systems 9 Total Hours: 25**

Charging Systems 2: Diagnose and Repair. This course introduces students to charging systems circuit and component diagnosis and repair.

HMTD 2207 Credits: 1**Electrical Systems 10 Total Hours: 25**

Advanced Truck and Machine Electrical: Diagnose and Repair. This course introduces students to advanced electrical systems and component diagnosis.

HMTD 2208 Credits: 1**Electronic Systems 1 Total Hours: 25**

Truck and Machine Electronic Control Systems: Theory. This course introduces students to electronic control systems.

HMTD 2209 Credits: 1**Electronic Systems 2 Total Hours: 25**

Truck and Machine Electronic Components: Diagnose and Repair. This course introduces students to electronic component diagnosis and repair.

HMTD 2210 Credits: 1**Electronic Systems 3 Total Hours: 25**

Truck and Machine Management Systems: Theory, Diagnose, Repair. This course introduces students to vehicle management systems.

HMTD 2211 Credits: 1**Gas Fuel (Auto) Eng Mgmt Sys 1 Total Hours: 25**

Engine, Fuel, and Ignition. This course introduces students to gasoline fueled engine Ignition and fuel management systems.

HMTD 2212 Credits: 1**Gas Fuel (Auto) Eng Mgmt Sys 2 Total Hours: 25**

Vehicle Electronic Systems. This course introduces students to automotive or light duty vehicle electronic control systems.

HMTD 2213 Credits: 1**Shop Simulation 2 Total Hours: 25**

This course allows students to work in a simulated work environment.

HMTD 2214 Credits: 1**Shop Simulation 3 Total Hours: 25**

This course allows students to work in a simulated work environment.

HMTD 2215 Credits: 1**Employment Skills Total Hours: 25**

This course builds on topics explored in workplace skills 1 and 2 and prepares the learner to enter the workforce by identifying employment opportunities, updating a resume and cover letter, and preparing for and following up on an interview.