

Diesel & Heavy Equipment Technician

Technical Diploma

Overview

The Diesel & Heavy Equipment Technician program helps you develop the skills you need to be successful in the on- and off-road service industry. You will learn to locate and repair mechanical and electrical problems in trucks, buses, construction equipment, farm equipment and industrial machinery.

Training emphasis is in diesel engine rebuilding, fuel injection systems, chassis and suspension systems, brakes and electrical systems. You will learn to perform preventive maintenance and troubleshooting procedures, to rebuild components and to respond to field service calls.

The Diesel & Heavy Equipment Technician program is offered at the Wisconsin Rapids campus.



Program Outcomes

Employers will expect you, as a Diesel & Heavy Equipment Technician graduate, to be able to:

- Practice safe working procedures
- Diagnose, service and repair diesel powered equipment
- Comply with federal, state and local regulations
- Proficiently operate tools and equipment common to the industry
- Diagnose, service and repair electrical systems
- Apply theoretical concepts to mechanical, electrical and hydraulic repair

Career Options

Agricultural Machinery Technician
Auto Technician
Chassis Repair Technician
Construction and Heavy Equipment Technician
Diesel or Heavy Equipment Technician
Engine Repair Technician
Fleet Maintenance Technician
Heavy Equipment Parts Salesperson
Industrial Equipment Technician

Potential for Advancement

Diesel Equipment Superintendent
Equipment Sales and Repair
Field Service Representative
Sales Representative
Shop Supervisor
Specialist-Electrical and Hydraulic
Specialist-Engines, Transmissions-Differentials, Brakes-Alignment
Truck/Auto Dealer
Truck Fleet Supervisor
Potential advancement generally requires further education.

Admissions Procedures

To apply to the Diesel & Heavy Equipment Technician program, please submit the following to MSTC Student Affairs Admissions Office:

1. WTCS application form and \$30 non-refundable application fee
2. Completed Accuplacer test. (Other test scores may be acceptable alternatives.) Entrance exam requirements for the Diesel & Heavy Equipment Technician program are:
 - Reading–Accuplacer score of 55 or equivalent
 - Language–Accuplacer score of 60 or equivalent
 - Math–Accuplacer score of 34 or equivalent

If a student does not meet the required scores in these academic areas, they may remediate and retest or complete an identified structured remediation course(s) in the Academic Support Center.

3. High school transcript or GED/HSED scores

Mid-State Technical College
Admissions
500 32nd Street North
Wisconsin Rapids, WI 54494
mstc.edu
888.575.MSTC

Program Course Descriptions

10462102

Bearings & Lubrication Systems 2 credits

Students are presented with information pertaining to the basic functions of bearing surfaces, bearing inspections, analysis of bearing failures and the importance of preventative maintenance.

10462114

Metals & Machining 3 credits

A two-part class which introduces the basics of metal science and machine shop practice. Metallurgical concepts of steel and iron production, properties of metals, testing of metals, carbon and its role, heat-treating, steel designations and cast iron and non-ferrous metals are introduced. Students will participate in lab exercises examining the properties of metal, an introduction to machine shop practices of safety, measurement and machining through the use of hand tools, drilling machines, saws and engine lathes. Students will be introduced to those concepts by both classroom presentation and hands-on shop experiences.

10462116

Metal Fabrication 3 credits

An introduction to structural steel and plate fabrication, sheet metal fabrication and basic electric arc and oxyacetylene welding. Fabrication techniques, metal selection, layout, cutting, bending, drilling, threading and joining will be presented. Information will be presented to the student followed by lab activities to provide a hands-on experience. The emphasis will be placed on developing an understanding of the tools, techniques, safe work habits and the application of metal fabrication skills.

32404322 Heating/Air Conditioning 3 credits

This course will provide an introduction to vehicle air conditioning systems. System components, operating characteristics, component testing, diagnosis and repair will be covered in detail for popular system types. Coverage will include servicing of engine cooling systems as well as diagnosis and servicing of vehicle heating systems. Prerequisite: Admission to Automotive Technician Program 324042 or Diesel & Heavy Equipment Technician Program 324121

32404330 Applied Fluid Power 2 credits

Covers basic principles and application of pumps, compressors, motors, valves, seals, packing and conductors. Students learn the advantage of hydraulic and pneumatic systems, as well as the physical properties of liquids and air. The intent is to identify various parts of a circuit and to illustrate standard liquid power components through laboratory experiments. Prerequisite: Admission to Automotive Technician Program 324042, Diesel & Heavy Equipment Technician Program 324121 or Machine Tool Technician Program 324201

32404375 Service Practices in Transportation Industry 2 credits

This course introduces the student to common tools, terminology and service practices in the transportation service field. Safety, environmental concerns and basic customer relations will also be covered. Service shop management practices and the use of automated work order, parts ordering and time management concepts are included. Prerequisite: Admission to Automotive Technician Program 324042 or Diesel & Heavy Equipment Technician Program 324121

32412308 Braking Systems 5 credits

Fundamentals of vehicle braking systems including drum and disc on hydraulic and air systems are studied. Power and anti-skid systems are included with emphasis on troubleshooting and component replacement and reconditioning. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412309 Suspension & Steering Systems 5 credits

Highlighted in this course will be an analysis of construction and working principles of chassis components. Included will be frames, suspension systems, steering gears and linkages, wheels and tires and wheel alignment. Special attention will be given to products used in servicing chassis components. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412310 Engine Performance-Diesel 5 credits

This course will provide an introduction to ignition systems, fuel systems, air induction systems, exhaust systems, emission control systems and engine electrical systems. Course emphasis will include the proper diagnosis and repair of system components as related to the truck, construction and heavy equipment industry. A review of engine operation and related servicing will also be provided. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412311 Advanced Electricity-Diesel 5 credits

This course will provide advanced training in the theory, operating principles, diagnosis and repair of vehicle electronic/electrical systems. Emphasis will include vehicle ignition, starting, charging and lighting system problem diagnosis and repair as related to the truck, construction and heavy equipment industries. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412312 Drive Trains 5 credits

The course will provide training in the proper diagnosis and repair of clutches, manual transmissions, drive shafts and universal joints and drive axles. Coverage of track-type vehicle service will also be included. Diagnostic and service procedures will apply to the truck, construction and heavy equipment industries. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412313 Electrical Systems 5 credits

This is the study of construction, function, and principles of operation of starting motors, charging systems and controls. Basic electronics including capacitance, inductance, series and parallel circuits, magnetism and Ohm's Law, wiring schematics, soldering techniques and use of diagnostic equipment are covered. Vehicle control and accessory systems will be studied. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412324 Engine Repair 5 credits

This course will provide a general overview of engine types and operating characteristics. Course emphasis will include the diagnosis and repair of cylinder heads, valve train components and engine blocks and related components. Engine support systems such as the lubrication systems, cooling system, ignition system, fuel and exhaust systems will also be covered. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

32412327 Fuel Systems & Emissions 5 credits

This course will provide a detailed coverage of the principles of operation, the components and diagnostic procedures for modern diesel engines. Emission control systems will be included. Course emphasis will include fuel injection and pump timing procedures. Prerequisite: Admission to Diesel & Heavy Equipment Technician Program 324121

Curriculum

Semester Courses (18 Credits)

10462116	Metal Fabrication	3
10804106	Intro to College Math	3
32404375	Service Practices in Transportation Industry	2
32412308	Braking Systems	5
32412309	Suspension & Steering Systems	5

Semester Courses (17 Credits)

32404322	Heating/Air Conditioning	3
32412312	Drive Trains	5
32412324	Engine Repair	5
32801351	Occupational Communication	2
32806351	Applied Science	2

Semester Courses (15 Credits)

10462102	Bearings & Lubrication Systems	2
10462114	Metals & Machining	3
32412311	Advanced Electricity-Diesel	5
32412313	Electrical Systems	5

Semester Courses (16 Credits)

32404330	Applied Fluid Power	2
32412310	Engine Performance-Diesel	5
32412327	Fuel Systems & Emissions	5
32809351	Applied Human Relations Elective	2

Total Credits 66

Please Note:

- This curriculum sequence is only for planning. Actual student schedules will vary depending on course availability. Program courses listed are not sequential.
- The Diesel & Heavy Equipment Technician program has August and January starting dates. However, we advise you to meet with a counselor to successfully plan your academic schedule.
- For General Education course descriptions (800 level courses), see section marked under Course Descriptions.