

Diesel and Heavy Equipment Technician

Two-Year Technical Diploma

Program Number: 32-412-1

Transportation Program Cluster

Center for Construction, Manufacturing, Apprenticeship & Transportation

Program offered at Madison Campuses

For information call: (608) 243-4169 or
(800) 322-6282 Ext. 4169

About the Program

The Diesel and Heavy Equipment Technician Program is a two-year diploma program for today's diesel industry. Trucking is one of the fastest-growing industries in the U.S., and all areas of the diesel industry are experiencing shortages of qualified technicians.

One out of seven people in Wisconsin work in the manufacture, distribution, maintenance or commercial use of motor vehicles. Agriculture and construction are other major portions of Wisconsin's economy and need trained technicians to keep modern equipment running.

Students learn to repair engines, transmissions, drivelines, electrical, electronic, hydraulic, fuel, brakes, air conditioning and transport refrigeration systems; adjust suspensions and wheel alignments; and perform maintenance and tune-ups.

Students are trained in simulated shop environments and are evaluated for attendance, work quality, efficiency, safety, initiative and cooperation as if they were actual employees. The program is also certified as an Association of Diesel Specialists (ADS) "TECH SMART" school. The Association of Diesel Specialists provides scholarships and program support.

Application Process

To apply to the program, students must submit a complete application. A completed application consists of (1) Application; (2) Application fee; and (3) High school transcripts – or - GED/HSED test scores – or – college transcript showing an Associate, Bachelor, or higher degree from an institution other than Madison College.

Unique Requirements for Admission

There are no unique requirements for admission to this program.

Unique Requirements for Graduation

Students must meet two 2.0 GPA requirements to graduate. (1) GPA for entire program must be 2.0 or above; (2) GPA of combined occupational courses (412) must be 2.0 or above.

Curriculum

The courses listed below outline the requirements for graduation for students entering this program in the 2011-2012 academic year. Requirements for graduation may vary depending on the semester in which a student is admitted to their program. Current/continuing students should consult their degree progress report available through their student center account for specific graduation requirements. Program requirements are subject to change.

FIRST YEAR		Hrs/week	
First Semester	Credits	Lec	Lab
20-890-200 College Success	2	2	0
10-412-140 Introduction to Diesel Technology	1	2	2
10-412-155 Heavy Duty Drivetrains*	4	4	14
10-412-164 Brake and Suspension Systems*	4	5	15
10-442-126 Metal Repair Techniques.....	2	1	2
10-104-189 Customer Relations	2	2	0
31-804-379 Vocational Math 1	1	2	0
Semester Total	16		

Second Semester		Hrs/week	
10-412-137 Preventive Maintenance Inspections	4	1	4
10-412-144 Fundamental Diesel Electrical/ Electronics Systems*	3	4	9
10-103-133 Excel-Beginning	1	1	1/3
10-103-137 Word-Beginning	1	1	1/3
10-412-145 Electrical/Electronics Systems Diagnostics*	3	4	9
31-806-363 Science 1	2	2	2
Semester Total	14		

SECOND YEAR

First Semester		Hrs/week	
10-412-138 Diesel Shop Management	2	3	0
10-412-176 Diesel Fuel Systems*	4	5	10
10-412-177 Diesel Engine Diagnostics*	2	3	5
10-412-178 Diagnostic Strategies.....	2	1	2
10-412-188 Electronic Control Systems*	2	4	9
Semester Total	12		

Second Semester		Hrs/week	
10-412-112 Mobile Hydraulics	3	2	2
10-412-125 Cab Climate Control/Refrigeration Systems	3	2	3
10-412-184 Diesel Engine Technology.....	2	1	3
10-412-185 Diesel Engine Repair	4	4	10
Semester Total	12		

*Meets for 9 weeks.

Notes:

- Safety procedures required in all labs.
- Prerequisites can be waived with Center approval.
- Advanced standing may be granted by program director and Center dean.
- Certain associate degree or higher post-secondary courses specific to the curriculum may substitute for courses upon approval of program director and Center dean.

Note: Students are placed in English or mathematics courses based on their scores on the COMPASS or ASSET test or on completion of the appropriate prerequisites.



Program Courses

10-412-112 Mobile Hydraulics 3 credits
 Prepares the student with the knowledge and skills needed to adjust, diagnose, service and repair mobile hydraulic systems found on trucks and construction equipment.

10-412-125 Cab Climate Control/ Refrigeration Systems 3 credits
 Lectures/labs provide skills to diagnose, maintain, and service cab climate control and transport refrigeration equipment found on truck trailers and off-road equipment. Pre or co-req: Mobile Hydraulics (10-412-112).

10-412-137 Preventative Maintenance Inspections 4 credits
 This course will provide the opportunity to perform preventive maintenance inspections and conduct minor repairs on heavy-duty trucks and equipment. Also included will be preparation for taking both the written portion and practical Commercial Driver's License (CDL) test. As part of the course requirements, students will take the written tests at the Department of Motor Vehicles (DMV) test center Pre or co-req: Mobile Hydraulics (10-412-112).

10-412-138 Diesel Shop Management 2 credits
 The student will gain the knowledge needed to function in a typical service department setting. The student will learn what it takes to manage a service department, the costs involved in running the department and the day-to-day problems that arise in the service department. General business operational procedures, record keeping and cost effectiveness will also be part of this course. Pre-req: All first year Diesel (412) courses.

10-412-140 Introduction to Diesel Technology 1 credit
 Includes a discussion of the job requirements, skills needed, career options, and employment opportunities in diesel equipment repair and maintenance. Introduces shop procedures, safety practices, tools and the use of service manuals. Pre-req: Enrollment permitted only with adequate COMPASS(or equivalent assessment test) scores in reading, writing, math and mechanical reasoning.

10-412-144 Fundamental Diesel Electrical/Electronic Systems 3 credits
 Theory and lab experiences in this course are designed to introduce the student to the diesel electrical/electronic systems used on today's modern trucks and construction equipment. Fundamental theory of electricity and electronics, troubleshooting techniques, use of digital multimeter and current clamp, types of electrical circuits, wiring, components, batteries and the use of wiring diagrams will be covered. Pre-req: Enrollment permitted only with adequate COMPASS test scores in reading, writing, math and mechanical reasoning.

10-412-145 Electrical/Electronic Systems Diagnostics 3 credit
 Theory and laboratory experiences in this course are designed to give the student the knowledge and skills needed to diagnose, service, and repair heavy-duty electrical systems found on today's modern trucks and off-road equipment. Coreq: Fund. Diesel Elec. (10-412-144). Students must receive a C or higher in Fund. Diesel Electrical (10-412-144) to continue into this course.

10-412-155 Heavy Duty Drivetrains 4 credits
 This course prepares the student with the knowledge and skills needed to adjust, diagnose, maintain, service and repair heavy duty drivetrains found on trucks and construction equipment.

10-412-164 Brake and Suspension Systems 4 credits
 Prepares the student with the knowledge and skills needed to adjust, diagnose, service and repair heavy duty brakes, and suspension systems. Students will also perform vehicle alignment procedures and utilize various alignment equipment.

10-412-176 Diesel Fuel Systems 4 credits
 Lectures and labs allow students to diagnose, service and repair diesel fuel systems found on trucks, off-road and agricultural equipment. Pre-req: All first year Diesel (412) courses.

10-412-177 Diesel Engine Diagnostics 2 credits
 Lectures and lab use the latest in diagnostic equipment to evaluate engine performance and diagnose power complaints on mechanical and computer controlled diesel fuel injection systems. Pre-req: All first year Diesel (412) courses. Co-req: Electronic Control Systems (10-412-188)

10-412-178 Diagnostic Strategies 2 credits
 Explores the logical thought process used analyzing and diagnosing system malfunctions and performance problems. Diagnostic and problem solving techniques will be included. Also included will be evaluating failures, classifying failures, problems and documentation of findings. Pre-req: All first year Diesel (412) courses, including a grade of C or higher in Electrical Systems Diag (10-412-145).

10-412-184 Diesel Engine Technology 2 credits
 Study in this course will allow the student to develop a basic knowledge of design, construction and operating principles of the diesel engine. Service, maintenance and the types of repairs made on diesel engines and diesel engine support systems will be a major emphasis of the course. Pre-req: All first year Diesel core (412) courses. Co-req: Diesel Engine Repair (10-412-185).

10-412-185 Diesel Engine Repair 4 credits
 Lectures and labs teach students to maintain, service and repair diesel engines and diesel engine support systems. The course also includes precision measuring, failure analysis and parts inspection. Pre-req: All first year Diesel core (412) courses. Co-req: Diesel Engine Technology (10-412-184).

10-412-188 Electronic Control Systems 2 credits
 This course provides the student with the experience needed to diagnose and service modern electronic control systems used on trucks and construction equipment. The course also includes electronic controlled diesel engines, ABS brake systems, electronic controlled transmissions, and other computer controlled electronic vehicle systems. Pre-req: All first year Diesel (412) courses. Co-req: Diesel Engine Diagnostics (10-412-177). Students must complete Diesel Engine Diagnostics in the 1st 9 weeks to continue into this course.

10-442-126 Metal Repair Techniques 2 credits
 This course covers safety, layout and measurement, grinding, drill press and lathe operation, filing, threading, properties of metals, oxy-acetylene welding, brazing and cutting, and SMAW, GMAW, GTAW and FCAW.

Additional required course descriptions may be found on the Madison College Website.

Career Potential:

- **Diesel and Heavy Equipment Technicians**
 Diagnose, repair and service medium and heavy duty trucks, light and heavy construction equipment or agricultural equipment and machinery.
- **Fleet Maintenance Technicians**
 Keep records on fleet vehicles and perform general maintenance, inspections and repairs.
- **Fuel Injection Technicians**
 Diagnose, repair and service fuel systems and governing devices on all types of diesel engines.
- **Alignment Specialists**
 Use computerized alignment equipment to diagnose, repair and adjust medium and heavy duty truck suspension systems.
- **Engine Rebuild Specialists**
 Disassemble, inspect, reassemble and test engines to factory specifications with dynamometer.

With additional education and/or experience, graduates may find employment as:

- **Service Writers or Managers**
- **Shop Foremen**
- **Team Leaders**
- **DOT Inspectors**
- **Factory Service Representatives**
- **Fleet Maintenance Managers**

More detailed and updated information on this program may be available at: madisoncollege.org. The college reserves the right to make changes in the regulations and courses announced in this publication without notice.

Madison Area Technical College provides equal opportunity in education and employment.