

# Diesel Equipment Technology

Program Code 104121

## Associate Degree - Two Years

Offered at the Sturgeon Bay campus. For information: (920) 746-4900. Visit our web site at <http://www.nwtc.edu/Programs/Diesel/>  
Toll-free: (800) 422-NWTC, ext. 5444.

### Program Description

Prepares students to service and repair diesel powered equipment and prepare graduates for management, ownership, supervisory level positions and advanced educational options. Instruction incorporates repair of steering, brakes, hydraulic systems, and chassis components.

### Program Outcomes

- Apply hydraulic systems fundamentals.
- Manage chassis, steering, and suspension systems.
- Explain diesel engine systems.
- Explain diesel engine fundamentals.
- Perform required preventive maintenance.
- Maintain brake systems.
- Analyze electronic/electrical systems.
- Manage heating - A/C systems.
- Comprehend power train systems.
- Interpret schematic drawings.
- Diagnose engine systems.
- Service vehicle systems.
- Communicate effectively with the customer.
- Complete customer repair orders accurately.
- Organize a daily work schedule.
- Tabulate a daily time sheet of technician's repair work.

### Requirements for Program Entry

- Completed application.
- High school transcript or equivalent (such as an HSED or GED® Transcript).
- NWTC Academic Skills Assessment or equivalent (See Academic Skills Assessment section for details and equivalents).
- High school background in math, science and technology education would be beneficial.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

### Accreditation

The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians.

The NWTC Diesel Equipment Technology program is an AED Foundation (Associated Equipment Dealers) Certified Program.

### Employment Potential

A graduate of the program will have the potential for employment in the following areas:

**Diesel and Heavy Equipment Technician:** diagnoses, services, and repairs a variety of heavy equipment ranging from over-the-road trucks, off-road construction equipment, agricultural equipment, and potentially stationary power supply engines.

**Related Specialist Technician:** diagnoses, services, and repairs fuel injection systems, hydraulics systems, trailer service and other specialty areas.

**Related Parts Support Manager:** manages a parts department within a repair facility.

**Industry Related Service Manager-Supervisor:** manages technician performance, directs work flow, tracks work progress, coordinates service business profitability, reports to Operations level management.

**Industry Related Sales Representative:** sales position within the diesel and heavy equipment industry or support business to the industry.

**Business Owner:** owns own business related to the diesel and heavy equipment or support business.

**Educational Trainer:** With additional study and transfer to a four-year baccalaureate college, a graduate could pursue a four-year degree in secondary, post-secondary or technical training industry.

### Notes

- A three to five page paper or specialty assignments are required for courses applied to an associate degree. Individual instructor requirements will be received at program orientation and listed in each course syllabus.
- Diesel program students will soon be able to enroll in a four credit Power Generation program enhancement certificate. Please call (920) 746-4919 for more details.
- Diesel program students will have the opportunity to obtain an A, B or C class Commercial Drivers' License (CDL) beginning in the Fall 2008 semester. Please call (920) 746-4916 for more details.

### Curriculum

The Diesel Equipment Technology Associate Degree is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation, a student will have completed 67 credits.

#### First Semester

Catalog No.	Description	Credits
10-412-100	Diesel Lab Operations Tech	1
10-412-108	Inte Combust Eng Tech-Intro to	5
10-412-109	Diesel Engine Service-Fundamen	5
10-412-112	Diesel Electrical Systems 1 Te	3
10-602-118	DC Electricity Technology	1
10-801-195	Written Communication	3
10-804-106	Intro to College Math	3
<b>Semester Total</b>		<b>17</b>

#### Second Semester

10-412-120	Diesel-Chassis/Susp/Steer Tech	4
10-412-121	Diesel-Brake Systems Technolog	3
10-412-122	Diesel Preventive Maint Techno	4
10-412-123	Diesel-Elect Systems Technolog	3
10-801-196	Oral/Interpersonal Comm	3
<b>Semester Total</b>		<b>17</b>

#### Third Semester

10-412-124	Diesel-Electric Eng System Tec	1
10-412-134	Diesel Engine Systems Technolo	4
10-412-137	Diesel-Schematic Interpret Tec	2
10-419-169	Hydraulics Technology	2
10-809-172	Race Ethnic & Diversity	3
10-809-199	Psychology Of Human Relations	3
<b>Semester Total</b>		<b>15</b>

#### Fourth Semester

10-412-140	Diesel Engine Troubleshoot Tec	4
10-412-141	Diesel-Power Trains Technology	5
10-412-145	Diesel-Refrig/AC Technology	3
10-801-197	Technical Reporting	3
10-809-197	Contemporary Amer Society	3
<b>Semester Total</b>		<b>18</b>
<b>Total Credits</b>		<b>67</b>

#### Recommended off campus work experiences, 20 hours in each area:

- Diesel and Heavy Equipment Service Writer
- Diesel and Heavy Equipment Service Manager
- Diesel and Heavy Equipment Shop Foreman
- Diesel and Heavy Equipment Parts Manager
- Diesel and Heavy Equipment Warranty Claims Person
- Diesel and Heavy Equipment Service Department Manager
- Diesel and Heavy Equipment Human Relations Manager
- Other areas with instructor's approval

This program is fully eligible for financial aid.



## Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to [www.nwtc.edu](http://www.nwtc.edu) or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

## Course Descriptions

*These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.*

### 10-412-100 DIESEL LAB OPERATIONS

**TECHNOLOGY** ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

### 10-412-108 INTERNAL COMBUSTION ENGINE

**TECHNOLOGY - INTRO TO** ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

### 10-412-109 DIESEL ENGINE SERVICE

**TECHNOLOGY-FUNDAMENTALS** ...diesel engine service procedures; lubrication, cooling, fuel intake and exhaust systems, bearings, seals and basic diesel engine diagnosis.

### 10-412-112 DIESEL ELECTRICAL SYSTEMS 1

**TECHNOLOGY** ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field.

### 10-412-120 DIESEL-CHASSIS/SUSP/STEER

**TECHNOLOGY** ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

### 10-412-121 DIESEL-BRAKE SYSTEMS

**TECHNOLOGY** ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

### 10-412-122 DIESEL PREVENTIVE MAINT

**TECHNOLOGY** ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

### 10-412-123 DIESEL-ELECT SYSTEMS TECHNOLOGY

...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

### 10-412-124 DIESEL-ELECTRIC ENG SYSTEM

**TECHNOLOGY** ...engine, drive train, chassis, and cab computer systems software.

### 10-412-134 DIESEL ENGINE SYSTEMS

**TECHNOLOGY** ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpillar systems, and testing methods. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

### 10-412-137 DIESEL-SCHEMATIC INTERPRET

**TECHNOLOGY** ...electronic/hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

### 10-412-140 DIESEL ENGINE TROUBLESHOOT

**TECHNOLOGY** ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

### 10-412-141 DIESEL-POWER TRAINS TECHNOLOGY

...safety, power train components, coupling systems, hydraulic retarders, mechanical transmissions, drive shafts, final drives, gear reduction boxes, planetary gear sets, chain-type final drive, belt drive systems.

### 10-412-145 DIESEL-REFRIG/AC TECHNOLOGY

...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

### 10-419-169 HYDRAULICS TECHNOLOGY

...will cover the following but not be limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

### 10-602-118 DC ELECTRICITY TECHNOLOGY

...ohms, amps, voltage, wire repair, series and parallel circuits, meter use, magnetism, \*\*research paper comparing and contrasting A/C and D/C electrical applications.