What can I do with a major in Diesel Technology?

Lewis-Clark State College offers one and two year certificates, A.A.S. and B.A.S Degrees in Diesel Technology through the Technical and Industrial Division. You can learn more about the Technical and Industrial Division and the Diesel Technology degrees by visiting their webpage or the LCSC catalog.

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**General Information:**

- Employment in this field usually requires an associate degree.
- The industry is looking for programs with state and/or national accreditation (LCSC Diesel Technology is accredited by AED - Automotive Equipment Distributors).
- If management is your goal, you should get a Bachelor of Applied Science degree in this program.
- While in high school, complete as many of, and as high a level of Math and English courses as possible.
- Work in this industry requires many hand tools -- obtain as many as possible before you begin this program.
- You must have a valid driver's license and clean driving record to be in the program and to become employable in this field.
What can I do with a major in Diesel Technology?

**Diesel Technician**

DIESEL TECHNICIANS repair and maintain the diesel engines that power transportation equipment, such as heavy trucks, buses, and locomotives. Some diesel technicians work on construction equipment, such as bulldozers, cranes, and road graders; and farm equipment, such as farm tractors and combines. A small number of technicians repair diesel-powered passenger automobiles, light trucks, or boats. They may also service a variety of diesel-powered electric generators, compressors, and pumps used in oil well drilling and irrigation systems.

**EMPLOYERS**

- Federal, State and local government
- Trucking fleets, train companies, boating and cargo industry
- Automotive repair and maintenance shops
- Motor vehicles and parts wholesalers
- Automotive and equipment rental and leasing agencies
- School systems
- Bus-lines
- Public transit companies
- Freight trucking companies
- Manufacturing, construction, and other companies
- Any organization providing transportation to deliver products or service

**TOOLS AND TECHNOLOGY**

- All types of diesel-operated vehicles and their parts
- Hand tools such as screwdrivers, pliers, and wrenches
- Precision measuring instruments and gauges
- Machine tools such as lathes and grinding machines
- Power tools such as pneumatic wrenches
- Welding and flame-cutting equipment
- Jacks and hoists
- Electrical testing equipment such as ohmmeters, ammeters, and voltmeters
- Engine testing equipment such as tachometers, dynamometers, and engine analyzers
- Computerized testing equipment

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**Bus and Truck Mechanic**

BUS AND TRUCK MECHANICS AND DIESEL ENGINE SPECIALISTS keep the equipment under their care operating safely, dependably and economically. Some work mostly on diesel engines of equipment such as farm machines, ships, locomotives, compressors and pumps used in oil well drilling and in irrigation. Others work mainly on construction equipment such as cranes, power shovels, bulldozers and paving machines. Mechanics work on diesel and gasoline-powered vehicles such as buses and trucks. They may also work on equipment such as earth movers and graders.

Mechanics’ duties vary with shop policy as well as the type of equipment they work on. In engine building shops, some mechanics repair and adjust engines to restore them to good working order, while others specialize in parts of the engine such as fuel injection systems. Mechanics who work in garages or heavy equipment shops usually have more varied duties. They may work on engines, transmissions, differentials, chassis, brakes, steering gears and front ends, as well as on motors, compressors, hydraulic and electrical systems. Depending on shop policy, mechanics have the option to specialize in certain parts of the machine or vehicle they repair. All mechanics diagnose problems and dismantle, clean, repair, refit, assemble and test the equipment according to manufacturers’ manuals and specifications. Mechanics use pressure gauges, precision instruments, torque wrenches and other hand tools to perform their duties.

**Employers**

- Federal, State and local government
- Trucking fleets, train companies and cargo industry
- School systems
- Bus-lines
- Public transit companies
- Freight trucking companies
- Any organization providing transportation to deliver products or service

**Skills and Qualifications**

Successful candidates in this career area will possess and develop the following skills and qualifications:

- Adjustable wide mouth pliers: pliers, slip joint pliers, water pump pliers
- Blow torches: acetylene torches, cutting torches
- Boring tools: boring bars, boring machines

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**Powerboat Mechanic**

POWERBOAT MECHANICS repair, service, and adjust electrical and mechanical equipment of gasoline or diesel-powered inboard or inboard-outboard boat engines. Most small boats have portable outboard engines that are removed and brought into the repair shop. Large craft, such as cabin cruisers and commercial fishing boats, are powered by diesel or gasoline inboard or inboard-outboard engines, which are only removed for major overhauls. Most of these repairs are made at the docks or marinas. Boat mechanics may also work on propellers, steering mechanisms, marine plumbing, and other boat equipment.

Small engines, like large engines, require periodic service to lessen the chance of any breakdowns and to keep them operating at top performance. During routine equipment maintenance, mechanics follow a checklist including inspection and cleaning of electrical systems, brakes, plugs, carburetors, and other parts. After inspection, mechanics usually repair or adjust parts that do not work properly, or replace parts that are beyond repair.

When equipment breaks down, boat/small engine mechanics use various techniques to diagnose the source and extent of the problem. They may use special computerized diagnostic testing equipment to analyze problems. When the problem is located, mechanics make the needed adjustments, repairs, or replacements. They may dismantle motors and examine parts for defects. Mechanics adjust generators and replace faulty wiring. They install piston rings, adjust carburetors, grind valves, and repair or replace reduction gears, and other parts. They then start the motor and listen to its sound to make sure it is running properly. Mechanics test the motor for conformance to manufacturer's specifications. Boat/small engine mechanics also examine propellers and propeller shafts and repair defective parts. Some highly skilled mechanics use specialized components and the latest computerized equipment to customize and tune boats for racing. They may operate boats on the water to test repairs.

**Employers**

- Retail dealers of boats
- Independent repair shops
- Marinas and boat yards
- Themselves (self-employed)

**SKILLS AND QUALIFICATIONS**

Successful candidates in this career area will possess and develop the following skills and qualifications:

- Mechanical aptitude
- Good work ethics
- Dependability and reliability
- Ability to learn new information
- Interpersonal skills
- Ability to observe safety practices
- Ability to work as part of a team
- Ability to analyze problems
- Knowledge of the fundamentals of small 2- and 4-stroke engines
- Ability to solve problems
- Knowledge of basic electronics
What can I do with a major in Diesel Technology?

TOOLS AND TECHNOLOGY

- Inboard and outboard marine engines
- Propellers, steering mechanisms, marine plumbing, and other boat equipment
- Piston rings, valves, gears, and other parts
- Hand tools such as wrenches, pliers, and screwdrivers
- Drills, grinders, and other power tools
- Electrical testing meters
- Computerized diagnostic testing equipment
- Service manuals

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**Farm Equipment Mechanic**

FARM EQUIPMENT MECHANICS work mostly on equipment brought into the shop for repair and adjustment. They check engine performance and repair or replace defective parts such as piston rings and cylinder valves, and test to make sure everything is operating correctly. In large shops, mechanics generally specialize in certain types of work, such as diesel engine overhaul, hydraulic maintenance, or clutch and transmission repair. Others specialize in certain repairs, such as air-conditioning units in cabs of combines, or the repair of specific types of equipment such as hay balers. In addition, some mechanics assemble new machinery, do body work, and repair dented or torn sheet metal on tractors and other machinery. Some mechanics install and service milking, irrigation, and other types of farm equipment. Mechanics also perform preventive maintenance on older equipment. Periodically, they test, adjust, clean, and tune engines to keep them in proper working order. During planting and harvesting seasons, farm equipment mechanics may travel to farms to make emergency repairs to minimize delays in farm operations.

**Employers**

- Service departments of farm equipment dealers
- Agricultural production and services
- Repair shops on large farms
- Independent repair shops
- Manufacturers of farm equipment
- Equipment rental and leasing companies

**Tools and Technology**

- Planters, tillers, combines, hay balers, crop dryers, tractors, and other farm machines and vehicles
- Milking, and spray and irrigation equipment
- Grain elevators
- Wrenches, pliers, hammers, screwdrivers, and other hand tools
- Welding equipment and power tools
- Micrometers, torque wrenches, and other precision instruments
- Computerized engine testing equipment, such as dynamometers, engine analysis units, and compression testers

**Skills and Qualifications**

Successful candidates in this career area will possess and develop the following skills and qualifications:

- Problem-solving and computer skills
- Knowledge of electronics and hydraulics
- Ability to work independently with minimum supervision
- Knowledge of the basics of diesel engines and transmissions
- Mechanical aptitude
- Ability to read circuit diagrams and blueprints
- Ability to keep up with changing technology
- Skill in computerized diagnostic equipment
What can I do with a major in Diesel Technology?

**Mobile Heavy Equipment Mechanic**

MOBILE HEAVY EQUIPMENT MECHANICS repair and maintain engines, transmissions, hydraulics, and electrical systems. They work on power cranes, bulldozers, graders, backhoes, railcars, stripping and loading shovels, and other types of heavy equipment. They perform routine maintenance checks on diesel engines and fuel, brake, and transmission systems, to ensure peak performance, safety, and longevity of the equipment. If an operator reports a malfunction, they search for its cause. With many types of modern heavy and mobile equipment, mechanics can use hand-held diagnostic computers to diagnose any part needing adjustment or repair. First, mechanics inspect and operate equipment to diagnose the nature of needed repairs. They may partially dismantle the engine and examine the parts for damage or excessive wear. Mechanics repair, replace, clean, and lubricate parts as necessary. In some cases, technicians calibrate systems by typing codes into an onboard computer. After putting the engine back together, technicians test the equipment to make sure it is operating correctly.

Repairing malfunctioning hydraulic components on certain types of equipment that have scoops, shovels, log forks, or scraper blades is an important responsibility of mobile heavy equipment mechanics. When the hydraulic apparatus loses power, mechanics examine it for hydraulic fluid leaks. They replace broken hoses or worn gaskets on fluid reservoirs, or may replace a defective hydraulic pump.

Mobile heavy equipment mechanics perform a variety of other types of repairs. They find and correct electrical problems and replace defective electronic parts. Mechanics may also take apart and repair crawler undercarriages and track assemblies. They may weld broken body and structural parts. Mechanics in some large shops specialize in one or two types of work, such as hydraulics or electrical systems.

**Employers**

- Federal, state, and local governments
- Surface mine operators
- Public utility companies
- Logging camps and contractors
- Heavy equipment rental and leasing companies
- Machinery manufacturers
- Airlines and railroads
- Steel mills
- Oil and gas field companies

**SKILLS AND QUALIFICATIONS**

Successful candidates in this career area will possess and develop the following skills and qualifications:

- Mechanical aptitude
- Basic mathematical skills
- Basic understanding of scientific principles
- Flexibility and the capacity to learn new skills quickly
- Ability to observe safety practices
- Ability to work as part of a team
- Ability to analyze problems
What can I do with a major in Diesel Technology?

TOOLS AND TECHNOLOGY

- Various mobile heavy equipment such as motor graders, trenchers and backhoe, crawler loaders, and stripping and loading shovels
- Pliers, wrenches, screwdrivers, and various other hand tools
- Pneumatic wrenches and various other power tools
- Welding and flame-cutting equipment
- Jacks, hoists, and cranes
- Micrometers and gauges
- Tachometers and dynamometers
- Ohmmeters, ammeters, and voltmeters
- Hand-held computers and computerized testing equipment
What can I do with a major in Diesel Technology?

**Automotive and Heavy Equipment Mechanic**
Keeping automotive and heavy equipment in good working condition is vital to the success of military missions. Automotive and heavy equipment mechanics maintain and repair vehicles such as jeeps, cars, trucks, tanks, and other combat vehicles. They also repair bulldozers, power shovels, and other construction equipment.

The services have about 45,000 automotive and heavy equipment mechanics. Each year, they need new mechanics due to changes in personnel and the demands of the field. After job training, mechanics begin repairing equipment under the direction of a supervisor. In time, they have the opportunity to supervise other workers and possibly manage repair shops, motor pools, or maintenance units.

**Employers**

Military: army, navy, etc.

Civilian occupations related to Automotive & Heavy Equipment Mechanic include:

- Automotive Body Repairer
- Automotive Painter
- Automotive Technician
- Diesel Technician
- Farm Equipment Mechanic
- Garage Supervisor
- Machine Repairer (Industrial)
- Maintenance Mechanic (General)
- Metallurgical Technician
- Mobile Heavy Equip Mechanic
- Motorcycle Technician

**Skills and Qualifications**

Successful candidates in this career area will possess and develop the following skills and qualifications:

- Mechanical aptitude
- Good work ethics
- Dependability and reliability
- Ability to learn new information
- Interpersonal skills
- Ability to observe safety practices
- Ability to work as part of a team
- Ability to analyze problems
What can I do with a major in Diesel Technology?

Technology and Training

Job training consists of 8 to 29 weeks of classroom instruction. Training length varies depending on specialty. Course content typically includes:

- Engine repair and tune up
- Troubleshooting mechanical and electrical problems
- Repairing and replacing body panels, fenders, and radiators
- Further training occurs on the job and through advanced courses.