

Area: Technical Education
 Dean: Gabriel Meehan
 Phone: (916) 484-8354
 Counseling: (916) 484-8572
<http://wserver.arc.losrios.edu/~tech/>

Degree: A.S. - Diesel Technology
 Certificates: Diesel Technology
 Clean Diesel Technology
 Certificates of Completion offered by the department:
 Preventative Maintenance

Diesel Technology Degree

The Diesel Technology degree provides training in diesel technology. Topics include an introduction to diesel technology, diesel engine repair, basic hydraulic principles of diesel technology, diesel brake systems, and diesel power trains.

Career Opportunities

This degree prepares the students as diesel technicians in the following areas of specialty: brakes, engine repair, hydraulics, and electrical.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- identify and properly utilize shop equipment and chemicals used in the diesel repair environment including hazardous waste disposal.
- apply proper techniques for complete engine removal, disassembly, cleaning, and reassembly of diesel engine.
- identify and explain brake system components, as well as application of proper technique for removal and repair of diesel brake system components.
- select and use proper test equipment to evaluate electrical systems, including voltmeters, ammeters, and ohmmeters.
- identify and explain diesel power train components and their functions to assist in diagnosis of drive train failure.

Requirements for Degree		28 Units
DCDT 101	Diesel Preventive Maintenance	4
DCDT 110	Diesel Engine Repair	4
DCDT 120	Basic Hydraulic Principles of Diesel Technology	4
DCDT 130	Diesel Brake Systems	4
DCDT 140	Diesel Electrical Systems	4
DCDT 150	Diesel Power Trains	4
DCDT 162	Clean Diesel Software Support	4

Associate Degree Requirements: The Diesel Mechanics Associate in Science (A.S.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Diesel Technology Certificate

The Diesel Technology certificate provides training in diesel technology. Topics include diesel brakes, hydraulics, electrical systems, and power trains.

Career Opportunities

This certificate prepares the students for various entry level positions exist in the diesel repair industry, such as entry level technician.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- apply established procedures in the diesel repair industry.
- inspect and maintain various diesel engine systems.
- diagnose and repair diesel engine systems.

Requirements for Certificate		24 Units
DCDT 101	Diesel Preventive Maintenance	4
DCDT 110	Diesel Engine Repair	4
DCDT 120	Basic Hydraulic Principles of Diesel Technology	4
DCDT 130	Diesel Brake Systems	4
DCDT 140	Diesel Electrical Systems	4
DCDT 150	Diesel Power Trains	4

Clean Diesel Technology Certificate

The Clean Diesel Technology certificate covers the diesel engine systems. Topics include biodiesel fuel and fuel systems, clean diesel technology, and clean diesel software support.

Career Opportunities

This certificate prepares the students for various entry level positions exist in the diesel repair industry, such as entry level technician, hydraulic technician, and heavy equipment service advisor.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- access requirements for converting fossil fuel to biodiesel vehicles.
- apply basic principles to the modern diesel engine.
- apply technical information for repowering, rebuilding, and replacing diesel engine components.
- locate, download, and print information specific to diesel tractor manufacturers.
- apply manufacturer specifications for diesel engine retrofit.

Requirements for Certificate		24 Units
DCDT 102	Biodiesel Fuel and Fuel Systems	4
DCDT 103	Clean Diesel Systems	4
DCDT 104	Clean Diesel Rebuild, Retrofit, Repower, Retire	4
DCDT 110	Diesel Engine Repair	4
DCDT 112	Clean Diesel Retrofit	4
DCDT 162	Clean Diesel Software Support	4

Preventive Maintenance Certificate

The Preventive Maintenance certificate prepares students for entry-level positions in the diesel technology industry. The topics include safety and environmental regulations and standards, as well as the ability to identify various diesel engine applications.

Career Opportunities

This certificate prepares the students for various entry level positions in the diesel repair industry.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- comply with safety and environmental regulations and standards
- explain the operation of diesel engine components and systems
- identify various diesel engine applications
- demonstrate complete engine reassembly
- apply basic state and federal regulations including Occupational Safety and Health Association (OSHA) and the Environmental Protection Agency (EPA)
- apply basic principles of preventive maintenance to diesel repair

Requirements for Degree		12 Units
DCDT 100	Diesel Technology Basics.....	4
DCDT 101	Diesel Preventive Maintenance.....	4
DCDT 110	Diesel Engine Repair.....	4

DCDT 100 Diesel Technology Basics 4 Units

Hours: 72 hours LEC

This course introduces diesel technology. Topics include shop safety, hazardous waste handling and disposal, and engine components and their function.

DCDT 101 Diesel Preventive Maintenance 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course introduces the field of clean diesel technology and preventative maintenance. It covers proper safety and hazardous waste training, use of basic hand and power tools, and the basic workings of the diesel engine. This course may be taken two times for credit using different equipment.

DCDT 102 Biodiesel Fuel and Fuel Systems 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course covers the chemistry, production, and impact of biodiesel technology. It also covers how to convert vehicle fuel systems to biodiesel and how this process affects warranties.

DCDT 103 Clean Diesel Systems 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course provides a complete overview of the clean diesel engine system. Topics include fuel injection systems, emission regulations, and diesel emission control systems. This course can be taken two times for credit using different equipment.

DCDT 104 Clean Diesel Rebuild, Retrofit, Repower, Retire 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course covers clean diesel rebuilding, repowering, retrofitting, or retiring of equipment decisions. Topics include rebuilding, replacement, and retirement of diesel systems and components. This course may be taken two times for credit using different equipment.

DCDT 110 Diesel Engine Repair 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course covers basic engine principles for diesel engine repair. It covers disassembly and reassembly of diesel engine systems, including cleaning and safe removal of engines, fuel injection systems, valve trains, and engine heads. This course may be taken two times for credit using different equipment.

DCDT 111 Clean Natural Gas Engine Repair 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course introduces clean natural gas engine repair. Topics include engine application and principles of engine operation, disassembly and reassembly of engine components and systems, and various engine systems as they relate to clean natural gas engines.

DCDT 112 Clean Diesel Retrofit 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course covers diesel engine retrofit needs for older diesel engines. Topics include troubleshooting, fault codes, and diesel particulate filter systems. This course may be taken two times for credit using different equipment.

DCDT 120 Basic Hydraulic Principles of Diesel Technology 4 Units

Hours: 54 hours LEC; 54 hours LAB

This course provides an introduction to the basic hydraulic principles and functions of the diesel engine. Topics include hydraulic fundamentals and principles, functions of hydraulic fluids, directional and flow control valves, and machine hydraulic overview. This course may be taken two times for credit using different equipment.

DCDT 130 Diesel Brake Systems 4 Units*Hours: 54 hours LEC; 54 hours LAB*

This course covers the operation of diesel brake systems and components. Topics include band, shoe, caliper, and full disc brakes. This course may be taken two times for credit using different equipment.

DCDT 140 Diesel Electrical Systems 4 Units*Hours: 54 hours LEC; 54 hours LAB*

This course covers the operation of diesel electrical systems. Topics include sensors used in emission control, electrical circuits, test instruments, charging systems, and electrical starting systems. This course may be taken two times for credit using different equipment.

DCDT 142 Diesel Emission Control Systems 4 Units*Hours: 54 hours LEC; 54 hours LAB*

This course covers the emission control system of the diesel engine. Topics include performance maintenance and emissions control within emission limits. This course may be taken two times for credit using different equipment.

DCDT 150 Diesel Power Trains 4 Units*Hours: 54 hours LEC; 54 hours LAB*

This course covers the diesel power train. Topics include inspection and adjustment of clutch linkage, flywheel, and replacement of clutch brakes. This course can be taken two times for credit using different equipment.

DCDT 162 Clean Diesel Software Support 4 Units*Hours: 72 hours LEC*

This course covers the skills needed to adequately retrieve and apply system information using internet based technical manuals specifically geared toward diesel tractor emission control systems. This course may be taken two times for credit using different software.

DCDT 190 Applied Projects in Clean Diesel Technology 2 Units

Prerequisite: DCDT 101, 110, 120, 130, 140, or 150 with a grade of "C" or better

Hours: 108 hours LAB

This course provides opportunities to pursue laboratory projects in clean diesel technology. Projects are selected by the diesel technology department. This course may be taken four times for credit on different projects.

DCDT 298 Work Experience in Clean Diesel Technology 1-4 Units*General Education: AA/AS Area III(b)**Hours: 60-300 hours LAB*

This course provides students with opportunities to develop marketable skills in preparation for employment in the clean diesel technology field. It is designed for students interested in work experience and/or internships in the clean diesel industry. Course content includes understanding the application of education to the workforce; completion of required forms which document the student's progress and hours spent at the work site; and developing workplace skills and competencies. Rigor is ensured through the development of appropriate level learning objectives set between the student and the employer. During the course of the semester, the student is required to fulfill a weekly orientation and 75 hours of related paid work experience, or 60 hours of unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. The weekly orientation is required for first time participants; returning participants are not required to attend the weekly orientation but are required to meet with the instructor as needed to complete all program forms and assignments. This course may be taken for a total of 16 units when there are new or expanded learning objectives. Students can earn a total of 16 Work Experience Units.