

**DET 179 Course Outline as of Fall 2018****CATALOG INFORMATION**

Dept and Nbr: DET 179 Title: DIESEL FOUNDATION

Full Title: Diesel Equipment Foundation and Safety

Last Reviewed: 1/22/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.25	17.5	Lecture Scheduled	39.38
Minimum	3.00	Lab Scheduled	2.25	8	Lab Scheduled	39.38
		Contact DHR	0		Contact DHR	0
		Contact Total	4.50		Contact Total	78.75
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 78.75

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: DET 80

**Catalog Description:**

Introduction to diesel powered equipment repair. The course is designed to be a foundation and safety course for the DET program. An overview of on and off highway equipment (i.e. agricultural, construction, public transportation and trucking equipment). Topics include: careers, employability skills, workplace practices, safety, personal protection equipment, basic first aid, tooling, lubricants, fasteners, bearings, seals, and lifting equipment.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100 and Course Completion of IED 190

**Limits on Enrollment:****Schedule of Classes Information:**

Description: Introduction to diesel powered equipment repair. The course is designed to be a foundation and safety course for the DET program. An overview of on and off highway equipment (i.e. agricultural, construction, public transportation and trucking equipment). Topics include: careers, employability skills, workplace practices, safety, personal protection

equipment, basic first aid, tooling, lubricants, fasteners, bearings, seals, and lifting equipment.  
(Grade Only)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100 and Course Completion of IED 190

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
---------------	----------------------	------------	-----------

<b>CSU Transfer:</b>	Effective:	Inactive:
----------------------	------------	-----------

<b>UC Transfer:</b>	Effective:	Inactive:
---------------------	------------	-----------

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Demonstrate foundational skills necessary to complete the diesel certificates and/or degree.
2. Identify and discuss operation of truck and equipment components.
3. Identify hazards and demonstrate safe shop practices.

### **Objectives:**

At the conclusion of this course, the student should be able to:

1. Describe the general layout and function of agricultural, construction, public transportation and trucking equipment components.
2. Summarize general and specific industrial shop safety standards for a repair shop setting.
3. Demonstrate the appropriate use and maintenance of hand, shop, and precision tools.
4. Correctly identify fasteners and evaluate appropriate use for each type.
5. Compare theory of operation of basic systems on agricultural, construction, public transportation and trucking equipment.
6. Describe the environmental issues and choose appropriate procedures for the disposal of hazardous materials.
7. Discuss the diesel equipment repair industry career field and employment opportunities.

### **Topics and Scope:**

- I. Introduction
  - A. Overview of agricultural equipment
  - B. Overview of construction equipment
  - C. Overview of public transportation

- D. Overview of trucking equipment
- II. Engine Operating Principles
- III. Powertrain Operating Principles
  - A. Mechanical drivetrain
  - B. Hydrostatic drivetrain
- IV. Electrical System Operation
- V. Fuel System Operation
- VI. Steering and Suspension Operation
- VII. Brake System Operation
- VIII. Career Information
  - A. Categories of industrial occupations
  - B. Wages, salaries, benefits
  - C. Local and regional opportunities
  - D. Shop expectations, practices, and routines
- IX. Shop Safety Standards and Practices
  - A. Fire and disaster procedures
  - B. Cleanliness and order in the workplace
  - C. Emergency prevention and intervention practices
  - D. Proper lifting procedures
  - E. Personal safety practices
  - F. Environmental health and safety compliance, including hazards
- X. Use and Maintenance of Hand, Shop and Precision Tools
  - A. Precision measuring tools
  - B. Hand and shop tools
  - C. Tool and equipment maintenance
  - D. Hoisting, rigging and slings
- XI. Fasteners and Mechanical Fitting Devices
  - A. Appropriate fastener use
  - B. Fastening techniques
  - C. Fitting application
  - D. General torque specifications
- XII. Bearings, Seals, Lubricants, Gaskets and Sealants

All topics are covered in both the lecture and lab parts of the course.

### **Assignment:**

#### Lecture-Related Assignments:

1. Reading 25 to 50 pages per week
2. Ten to fifteen tests including a final exam

#### Lab-Related Assignments:

1. Complete vehicle identification worksheets
2. Complete shop safety and hazardous materials identification worksheets
3. Identify tools and fasteners, complete worksheets
4. Complete NATEF (National Automotive Technicians Education Foundation) recommended task sheets
5. Daily work logs (work assigned, work completed)

### **Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Daily work logs

Writing  
0 - 25%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Tool and fastener identification worksheets

Problem solving  
10 - 20%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Vehicle component identification, shop safety, hazardous material identification worksheets and NATEF task sheets

Skill Demonstrations  
10 - 30%

**Exams:** All forms of formal testing, other than skill performance exams.

Tests including a final exam

Exams  
30 - 50%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

### **Representative Textbooks and Materials:**

Fundamentals of Mobile Heavy Equipment. Wright, Gus and Duffy, Owen and Heard, Scott. Jones and Bartlett. 2019

Fundamentals of Medium/Heavy Duty Commercial Vehicle Systems. Duffy, Owen and Wright, Gus. Jones and Bartlett. 2016

Instructor prepared materials