### **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		<b>Course Hours per Week</b>		Nbr of Weeks	<b>Course Hours Total</b>	
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:**

AS Degree: CSU GE:	Area Transfer Area	Effective: Effective:	Inactive: Inactive:
IGETC:	Transfer Area	Effective:	Inactive:
CSU Transfer	Effective:	Inactive:	
UC Transfer:	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

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

Tool and fastener identification worksheets

**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

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

Tests including a final exam

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

None

#### **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

W	riting
0 -	25%

Problem solving 10 - 20%

Skill Demonstrations 10 - 30%

> Exams 30 - 50%

Other Category 0 - 0%