

**DET 87 Course Outline as of Fall 2017****CATALOG INFORMATION**

Dept and Nbr: DET 87 Title: LT/MD DUTY DIESEL ENGINE

Full Title: Light and Medium-Duty Diesel Engines

Last Reviewed: 9/27/2010

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	6	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 64

**Catalog Description:**

The study of diesel engines and fuel systems as the power source in light or medium duty vehicles or equipment. Principles and theories are studied by running, testing, diagnosing, disassembling and reassembling components, systems, and engines.

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

Eligibility for ENGL 100 or ESL 100

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

Description: The study of diesel engines and fuel systems as the power source in light or medium duty vehicles or equipment. Principles and theories are studied by running, testing, diagnosing, disassembling and reassembling components, systems, and engines. (Grade Only)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100

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**

### **Outcomes and Objectives:**

Upon successful completion of this course, students will be able to:

1. Demonstrate safe and orderly work practices in the diesel equipment technology lab.
2. Demonstrate appropriate diesel engine diagnostic and troubleshooting methods and tune-up techniques.
3. Describe basic diesel engine principles used on compression ignition engines.
4. Measure serviceable engine components and compare data to manufacturers specifications.
5. Disassemble, inspect, adjust, and reassemble a diesel engine as part of a team.
6. Practice maintenance and repair procedures related to engine and fuel system failures.

### **Topics and Scope:**

1. Basic safety in the diesel shop
2. Appropriate handling of diesel shop wastes and hazardous materials
3. Common compression ignition engine operation as compared to spark ignition
4. Basic hydraulic principles
5. Diesel engine components and service
  - a. Cylinder block description and servicing procedures
  - b. Crankshaft and main bearings
  - c. Flywheel and vibration damper
  - d. Pistons, rings, and connecting rods
  - e. Camshaft and timing gear train
  - f. Cylinder head and valves
6. Diesel engine systems
  - a. Intake and exhaust
  - b. Cooling
  - c. Lubrication
  - d. Fuel injection
  - e. Electrical
7. Refining and properties of diesel fuels

8. Diagnosis and troubleshooting
  - a. Proper starting procedures
  - b. Engine dynamometer
  - c. Engine diagnosis
  - d. Tune-up procedures

### Assignment:

1. Read 40-60 pages per week
2. Complete lab workbook
3. Research and write a report on topic related to light duty diesel engines (3 to 5 pages)
4. Exams (3 to 5)
5. Team project of disassembling, inspecting, adjusting, and reassembly of a diesel engine

### 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.

Written report

Writing  
5 - 15%

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

None

Problem solving  
0 - 0%

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

Lab workbook; team project of disassembling, inspecting, adjusting, and reassembly of a diesel engine.

Skill Demonstrations  
40 - 55%

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

Exams: multiple choice, true-false, matching, completion

Exams  
40 - 55%

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

None

Other Category  
0 - 0%

### Representative Textbooks and Materials:

Diesel Technology by Andrew Norman and John Corinchock, Goodhear/Wilcox Publishers, 7th edition, 2007.