

DET 87 Course Outline as of Spring 2002**CATALOG INFORMATION**

Dept and Nbr: DET 87 Title: LIGHT/MED DUTY DIESEL EN

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	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

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:****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:

Limits on Enrollment:

Transfer Credit: CSU;

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

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area	Effective:	Inactive:
CSU GE:	Transfer Area	Effective:	Inactive:
IGETC:	Transfer Area	Effective:	Inactive:
CSU Transfer:	Transferable	Effective: Fall 1981	Inactive: Fall 2017
UC Transfer:		Effective:	Inactive:

CID:

Certificate/Major Applicable:

Certificate Applicable Course

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. Differentiate among the applications of diesel engines as used in automobiles, light and medium trucks, and small industrial or agricultural equipment.
3. Deduce and describe the application of diesel engine systems and components to light/medium duty machines.
4. Demonstrate appropriate diesel engine diagnostic and troubleshooting methods and tune-up techniques.
5. Describe basic diesel engine principles used on compression ignition engines.
6. Measure serviceable engine components and compare data to manufacturers specifications.
7. Disassemble, inspect, adjust, and reassemble a diesel engine as part of a team.
8. Practice maintenance and repair procedures related to engine and fuel system failures.

[Outcomes and objectives meet or exceed NATEF Applied Academic & Workplace Skills for Medium/Heavy Truck Technicians (Reference Standard 6.5, ASE Program Certification Standards Manual, 1998.)]

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:

Students will be assigned a number of engine applications for study. They will:

1. study operational principles
2. perform maintenance practices
3. follow test procedures
4. troubleshoot diesel engines
5. diagnose problems
6. repair as needed
7. complete all projects in a timely manner

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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing
0 - 0%

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

Lab reports, Quizzes

Problem solving
15 - 25%

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

STRUCTURED LAB EXERCISES

Skill Demonstrations
15 - 35%

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

Multiple choice

Exams
40 - 55%

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

Attendance and participation.

Other Category
5 - 10%

Representative Textbooks and Materials:

An Introduction to Compact and Automotive Diesels, Edward Ralbovsky, Delmar Publishers, 1st Ed., 1996.