DET 82A Course Outline as of Spring 2008

CATALOG INFORMATION

Dept and Nbr: DET 82A Title: DIESEL ENGINE OVERHAUL
Full Title: Diesel Engine Overhaul
Last Reviewed: 1/22/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.50	17.5	Lecture Scheduled	43.75
Minimum	3.00	Lab Scheduled	2.00	8	Lab Scheduled	35.00
		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: 87.50 Total Student Learning Hours: 166.25

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:	

Catalog Description:
The operating principles and overhaul of the heavy duty diesel engine and related systems. Course involves disassembly and reassembly of engines, using service manuals to inspect components and analyze component failures.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100.

Limits on Enrollment:

Schedule of Classes Information:
Description: Operating principles and overhaul of the heavy duty diesel engine and related systems. Course involves disassembly and reassembly of engines, using service manuals to inspect components and analyze component failures. (Grade Only)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100.
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 2004	Inactive:	Fall 2014
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon successful completion of the course, students will be able to:
1. Differentiate among types of internal combustion engines according to their fuel source.
2. Describe the fundamentals of internal combustion engine operation including the following systems:
   -Fuel
   -Lubrication
   -Cooling
   -Intake
   -Exhaust
   -Engine Accessories
3. Analyze and correct the performance of each individual component as it relates to total diesel engine operation.
4. Interpret diesel engine disassembly instructions in a service manual in order to successfully disassemble and reassemble an engine.
5. Measure, inspect, and evaluate serviceable diesel engine components using precision measurement tools and compare data to manufacturers' specifications.
6. Select and order diesel engine parts using manufacturers parts systems.
7. Disassemble, inspect, evaluate, adjust, and reassemble a diesel engine as part of a team.

Topics and Scope:

1. Engine fundamentals
   a. Engine design
   b. Theory and principals of operation
   c. Internal engine diagnosis
   d. Engine removal procedures

e. Engine disassembly
f. Engine cleaning and inspection

2. Blocks and liners
   a. Engine block inspection and service
   b. Liner inspection and service
3. Crankshafts
   a. Crankshaft inspection and service
   b. Crankshaft measurement
   c. Crankshaft bearings and clearance
4. Pistons, rings, connection rod service
   a. Piston inspection and service
   b. Piston ring identification and service
   c. Connection rod inspection
5. Cylinder head service
   a. Valves and seat inspection
   b. Head inspection and service
6. Camshafts
   a. Camshaft inspection and measurement
   b. Camshaft drive systems
   c. Camshaft timing set-up
7. Engine set-up
   a. Valve adjustment
   b. Injector timing
8. Engine lube systems
   a. Engine oils, filters
   b. Lube pumps and systems
9. Engine cooling systems
   a. Coolants and additives
   b. Cooling systems components
   c. Cooling systems diagnosis and repair

Assignment:

1. Assigned textbook readings, 40-60 pages per week.
2. Lab: Perform engine cleaning, disassembly, and measurements.
3. Observe engine systems and evaluate for conditions related to operation.
4. Perform engine reassembly according to manufacturer recommendations.
5. Lab worksheets (10-12).
6. Research and prepare written (3-5 pages) report on topics related to modern diesel engines.

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.

Lab reports, report	Writing 5 - 15%

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

Lab worksheets	Problem solving 20 - 30%

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

Structured lab activities	Skill Demonstrations 20 - 30%

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

Multiple choice, true/false, matching items, tests (4)	Exams 25 - 50%

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: Fundamentals, Service, Repair. Norman, Corinchock, Goodheart-Wilcox Pub. 7th Ed., 2007.