



CAT® Equipment Technician

Spring 2000

David Clark

COURSE INFORMATION

TITLE

MAG 1 - Diesel Engines

CATALOG DESCRIPTION

This course includes the principles of design, construction, and capabilities of Caterpillar diesel engines used throughout the power equipment industry. Emphasis is placed on engine chamber design and injection systems. Principles and theories are studied by running, testing, diagnosing, disassembling, and re-assembling components, systems, and engines. Safety is emphasized throughout.

UNITS & HOURS

5 Units

3 hours lecture and 6 hours lab per week

Monday & Wednesday

7:45 - 9:00

Lecture

AGR 2 Classroom

9:00 - 9:20

Break

9:20 - 11:50

Lab

AGM 4 Shop

TEXTBOOKS

Diesel Mechanics, 4th Edition Schulz Glencoe Div. of Macmillan/McGraw-Hill
Student Workbook, 4th Edition Schulz Glencoe Div. of Macmillan/McGraw-Hill
Caterpillar 3-Ring Binder + Materials

REQUIRED MATERIALS

- Approved eye protection/safety glasses (Z87.1 A.N.S.I.)
- Approved footwear
- Two work shirts (approx. \$35)
Reedley College Caterpillar Equipment Technician shirt @
A.V. Uniform, 2930 N. Blackstone, Fresno 93703 Phone: 224-1199

ASSIGNMENTS & GRADES

The class is designed to develop equipment technician skills to service and repair Caterpillar diesel engines. Laboratory skills (i.e., diesel engine disassembly, measurement, re-assembly, operation) will constitute approximately one-half of the student's grade. The remaining one-half of the grade will be determined by organizing lecture notes, handouts, and assignments; 4 major unit tests; and the final exam.

Point Distribution: 90% = A, 80% = B, 70% = C, 60% = D, Less = F

<u>Lecture:</u>	Homework	150		
	4 Tests @ 50/each	200		
	Notebook	50		
	Final Exam	<u>100</u>	Lec. Total	500
<u>Lab:</u>	Participation 32 @ 5/each (Timeliness, clean-up, work ethic)	160		
	Leadership	40		
	Assignments	<u>300</u>	Lab Total	<u>500</u>
			Total	<u>1000</u>

FINAL EXAM

Wednesday, May 17, 2000 at 8:00 a.m.

*Attendance
drop date*

GRADE POLICY

On separate sheet

WORK ETHIC

On separate sheet

OFFICE HOURS

Tuesday, Thursday, Friday
Ag Shop Office (AGM 5)

1:00 - 2:00 p.m.
Telephone: RC Ext. 3317 or off-campus 638-0317

COURSE OUTLINE

Introduction to Diesel Engines

1. Safety
2. Tools and Equipment
3. Engine Oil and Diesel Fuel
4. Cycle Operation/Combustion Chamber
5. Basic Engine Components
6. Engine Disassembly

Section 1 **TEST**

Chapters 1-12

Diesel Engine Components and Service

1. Engine Block
2. Camshaft
3. Crankshaft
4. Piston and Rings
5. Cylinders and Liners
6. Cylinder Head and Valves

Section 2 **TEST**

Chapters 13-19, 21-24

Diesel Engine Systems

1. Air Intake systems
2. Exhaust systems
3. Cooling Systems
4. Lubrication Systems

Section 3 **TEST**

Chapters 20, 25-27

Fuel Injection Systems

1. Governors
2. Emission Controls
3. Fuel Injection Nozzles and Holders
4. Scroll Injection Systems
5. Sleeve Metering Injection Systems
6. Unit Injection Systems

Section 4 **TEST**

Chapters 28-35

Break-in, Troubleshooting, and Tune-up

1. Proper Starting Procedures
2. Engine Dynamometer
3. Diagnosis
4. Tune-up

Section 5 **TEST**

Chapters 50-51