



# CAT® Equipment Technician

## COURSE INFORMATION

Fall '99

Gary Wenter

### TITLE

**MAC 2 - Machine Electrical Systems**

### CATALOG DESCRIPTION

This course concentrates on the fundamentals of electricity and how they apply to current heavy equipment electrical systems. The students will gain knowledge and analytical skills in vehicular diesel electrical systems, including: starting, charging, electronic monitoring, fuel injection, and accessories.

### UNITS & HOURS

5 Units			3 hours lecture and 6 hours lab per week
Tuesday and Thursday			1:45 - 5:50 p.m.
1:45 - 3:00	Lecture	AGR 2	
3:00 - 3:20	Break		
3:20 - 5:50	Lab	AGM 4	

### TEXTBOOK

Electrical and Electronic Systems

### REQUIRED MATERIALS

- Approved eye protection/safety glasses (Z87.1 A.N.S.I.)
- Approved footwear
- Two work shirts (Approximately \$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 diagnose and repair machine electrical system problems and failures. Laboratory skills (systems service, evaluation, and repair) will constitute 50% of the student's grade. The remaining 50% of the grade will be determined by lecture tests (quizzes, midterm, final) and assignments (homework, notebook, and worksheets).

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 18 @ 15/each	270		
	<small>(Timeliness, clean-up, work ethic)</small>			
	Assignment	<u>230</u>	Lab Total	<u>500</u>
			<b>Total</b>	<b><u>1000</u></b>

### FINAL EXAM

Tuesday, December 14, 1999 at 1:00 p.m.

### GRADE POLICY

On separate sheet

*Attendance  
drop data*

## **WORK ETHIC**

On separate sheet

## **OFFICE HOURS**

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

10:00-11:00 a.m.  
Telephone: 638-3641, Ext. 3719 or 638-0317 off-campus

## **COURSE OUTLINE**

### Theory of Electricity

1. Basic Electrical Circuit
2. Current Voltage Resistance
3. Magnetism, Electromagnetism
4. Ohms Law

### Electrical Diagnostic Equipment

1. Volt Ohm Meter
2. Amp Meter
3. Starting Charging Analyzer
4. Electrical Load Testing Equipment

### Starting Systems

1. Battery Testing, Charging, and Servicing
2. Starter Testing, Repair, and Replacement
3. Starting Solenoids, Ignition Switches, and Wiring
4. Troubleshooting Starting Systems

### Charging Systems

1. Generators and Regulators
2. Alternators and Regulators
3. On Vehicle Testing and Repair
4. Wiring Harnesses
5. Troubleshooting Charging Systems

### Accessory Circuits

1. Electrical Schematics
2. Wiring
3. Switches
4. Electrical Symbols
5. Electrical Connectors
6. Relays and Resistance
7. Troubleshooting Accessory Circuits

### Electronic Monitoring Systems

1. Electronic Fuel Injection
2. Diagnostic Service Tools
3. Computerized Monitoring Systems
4. Troubleshooting Electronic Monitoring Systems