

BELLINGHAM TECHNICAL COLLEGE

DIESEL EQUIPMENT TECHNOLOGY

COURSE NUMBER: DET 106 (A) (Engines/Hydraulic Brakes)

COURSE TITLE: ELECTRICAL/ELECTRONIC SYSTEMS

CREDITS: 4cr

COURSE DESCRIPTION: This course will address the basic operation of electrical/electronic systems, with the emphasis on preventive maintenance and logical troubleshooting.

OUTCOME: Systematically summarize various engine and hydraulic brake control systems and logically troubleshoot problems within those systems.

OUTLINE:

1. General Electronic Engine Designs and Classifications
2. Basic Electricity Review
3. Wiring and Schematic Fundamentals
4. Hands on Wiring and Connector Repair
5. Sensors, DMM's, DSO's and testing
6. "Readers", Computers, and Software

STUDENT PERFORMANCE OBJECTIVES:

Given, reference materials, tools of the trade and following industry approved safety procedures the student will:

1. identify operating fundamentals, Ohm's Law, and basic electricity
2. identify major system components with 90% accuracy
3. troubleshoot systems
4. read and evaluate schematics with 90% accuracy
5. identify different types of engines and their troubleshooting procedures with 90% accuracy

METHOD OF INSTRUCTION:

1. demonstration
2. discussion
3. interactive software
4. lecture
5. field trips
6. audio/visual

Provide opportunity for disadvantaged or disabled students by providing alternate modes of learning.

STUDENT ASSIGNMENTS/REQUIREMENTS:

1. 90% class attendance required
2. **completion** of assigned job sheets required
3. **completion** of self evaluation forms required at the end of each quarter
4. **completion** of Caterpillar Basics Electrical/Electronics required
5. A **complete** and **current** resume will be **required** at the end of each and every quarter before grades will be assigned

EVALUATION AND GRADING:

- 100% completion of assigned job sheets required. No grade will be assigned if the job sheets are not completed.
 - Individual tests account for 10% of the final grade
 - Group/Team tests account for 35% of final grade
 - Attendance accounts for 20% of the final grade
 - Participation accounts for 25% of the final grade
1. Afternoon co-op **MAY** be available with instructor approval. Hours for financial aid will be compiled at the end of each month or quarter.

2. Grade reduction for attendance below 90% **will** be assessed at instructor discretion.

3. Letter grades:

0 - 61 = F	62 - 65 = D-	66 - 68 = D	69 - 71 = D+	72 - 75 = C-	76 - 78 = C
79 - 81 = C+	82 - 85 = B-	86 - 88 = B	89 - 91 = B+	92 - 95 = A-	96 - 100 = A

REQUIRED STUDENT SUPPLIES AND MATERIALS:

REQUIRED TEXT: "Electrical/Electronic Systems"

VAVCC

ADDITIONAL INSTRUCTIONAL RESOURCES:

- | | |
|---|-----------------------|
| 1. <u>Advance Engine Performance Diagnosis</u> | <u>Prentice Hall</u> |
| 2. <u>Electronic Troubleshooting</u> | <u>Caterpillar</u> |
| 3. <u>Troubleshooting and Repair "Celect" System L10 M11, N14</u> | <u>Cummins</u> |
| 4. <u>60 Series Troubleshooting DDEC III</u> | <u>Detroit Diesel</u> |
| 5. <u>444E Navistar Troubleshooting</u> | <u>Navistar</u> |
| 6. <u>CONCRETE CONSTRUCTION</u> | <u>trade magazine</u> |
| 7. <u>CRANE WORKS</u> | <u>trade magazine</u> |
| 8. <u>CONSTRUCTION EQUIPMENT</u> | <u>trade magazine</u> |
| 9. <u>NATIONAL FISHERMAN</u> | <u>trade magazine</u> |
| 10. <u>HYDRAULICS AND PNEUMATICS</u> | <u>trade magazine</u> |
| 11. <u>Diesel Progress</u> | <u>trade magazine</u> |
| 12. <u>Cummins Virtual Library</u> | <u>Cummins</u> |