

# BELLINGHAM TECHNICAL COLLEGE

## DIESEL EQUIPMENT TECHNOLOGY

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COURSE NUMBER: DET 116 (B) (Hydraulics/PM)

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 hydraulic control systems and logically troubleshoot problems within those systems. PM checks of electrical systems will also be covered.

OUTLINE:

1. General Electronic Designs in Hydraulics
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 competencies and tasks required
3. completion of Caterpillar Basics Library “Electrical/Electronics” with an 80% score or higher

**EVALUATION AND GRADING:**

1. Assigned competencies, tasks, quizzes, 90% attendance, and chapter questions are 100% of the final grade.
3. Attendance below 90% will receive an incomplete grade.
4. 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: “[autoshop101.com](http://autoshop101.com)”

See Instructor

**ADDITIONAL INSTRUCTIONAL RESOURCES:**

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|---|-----------------------|
| 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>        |