



## HEAVY DUTY ELECTRONICS — HCEM 1234

### A. Course Description

- **Credits:** 3.00
- **Lecture Hours/Week:** 1.00
- **Lab Hours/Week:** 2.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

This course teaches students heavy equipment electronics, diagnostics and repair. The student will enhance their knowledge of equipment electronics and failure analysis through instruction and hands-on training. Course work will include electrical schematics and symbols, advanced multimeter training, testing, troubleshooting and repair of electronic monitoring systems. Computerized engine components are also covered. Prerequisites: HCEM1132.

### B. Course Effective Dates: 8/21/03 – Present

### C. Outline of Major Content Areas

As noted on course syllabus

### D. Learning Outcomes

1. analyze electrical circuits using digital multimeters
2. analyze electrical schematics
3. apply failure analysis to electronic components
4. define voltage drop
5. demonstrate shop safety practices
6. demonstrate use of diagnostic equipment on computerized engines
7. explain digital multi-meter readings
8. explain electrical schematics
9. explain electronic monitoring systems
10. identify electrical symbols
11. identify electronic components
12. test electronic components
13. test electronic monitoring systems
14. troubleshoot electronic engines

15. troubleshoot electronic switching systems
16. troubleshoot through use of electrical schematics

**E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

**F. Learner Outcomes Assessment**

As noted on course syllabus

**G. Special Information**

None noted