

# Dakota County Technical College

## HCEM 2177: Machine Electronics I

### A. COURSE DESCRIPTION

Credits: 2

Lecture Hours/Week: 1

Lab Hours/Week: 1

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will focus on Machine Electronics. The course will start out with a review of Ohms law and series and parallel electric circuits. Sensors used in modern electronic systems will be covered including switches, PWM sensors, Analog sensors, speed sensors, on/off solenoids, PWM solenoids etc. We will cover electrical schematics, how to read them, find part numbers for electrical components and wiring harnesses and locate pin locations. We will cover electrical connectors and how to repair them including Deutsch, Sure Seal and Tyco/Amp connectors. We will discuss electronic system fault codes and how to troubleshoot them. We will discuss why we need to calibrate machines and do a live machine calibration.

**B. COURSE EFFECTIVE DATES:** 01/27/2011 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

### D. LEARNING OUTCOMES (General)

1. use safe work procedures
2. understand Ohms Law
3. understand series and parallel circuits
4. troubleshoot electrical wiring using voltage drop
5. understand PWM/Digital sensor operation
6. understand how to troubleshoot PWM/Digital sensors
7. understand the operation of analog sensors
8. understand how to troubleshoot analog sensors
9. be able to read and interpret electrical schematics
10. identify Deutsch connectors, sure seal connectors and tyco/amp connectors
11. locate componenets on a machine using a schematic
12. be able to use Cat ET
13. be able to retrieve and erase fault codes using CAT ET
14. calibrate a machine using Cat ET

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

None

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted