MACHINE ELECTRONICS I — HCEM 2177

A. Course Description
   - Credits: 2.00
   - Lecture Hours/Week: 1.00
   - Lab Hours/Week: 1.00
   - OJT Hours/Week: 0
   - 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: 1/27/11 – Present

C. Outline of Major Content Areas
   - As noted on course syllabus

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

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

F. **Learner Outcomes Assessment**
   As noted on course syllabus

G. **Special Information**
   None noted