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. Reviewing Ohm’s law along with series and parallel circuits. Sensors used in modern electronic systems will be covered including switches, PWM sensors, analog sensors, speed sensors, on/off solenoids, and PWM solenoids. We will cover electrical schematics, how to read them, find part numbers for electrical components and locate pin locations. We will cover repairs and understanding of electrical connectors for varieties such as Deutsch, Sure Seal, and Tyco/Amp connectors. We will discuss electronic systems fault codes and how to troubleshoot them. We will discuss why we need to calibrate machines and do a live machine recalibration. Identification of main components following OEM specified directions in removing emissions.

B. **Course Effective Dates:** 1/27/11 – Present

C. **Outline of Major Content Areas**

As noted on course syllabus

D. **Learning Outcomes**

1. Connect diagnostic tooling to OEM machine.
2. Identify Deutsch, Sure Seal, and Tyco/Amp Connectors
3. Locate components on a machine using a schematic.
4. Read and interpret electrical schematics Understand how CAN Bus works.
5. Troubleshoot electrical wiring using voltage drop.
6. Understand Ohm’s law.
7. Understand series and parallel circuits.
8. 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