A. Course Description

- Credits: 2.00
- Lecture Hours/Week: 0.00
- Lab Hours/Week: 2.00
- OJT Hours/Week: 0
- Prerequisites: None
- Corequisites: None
- MnTC Goals: None

This course will focus on electrical troubleshooting and repair problems and procedures relating to collision electrical damage problems. Prerequisites: None

B. Course Effective Dates: 3/15/98 – Present

C. Outline of Major Content Areas

As noted on course syllabus

D. Learning Outcomes

1. Aim headlamp assemblies and fog/driving lamps; determine needed repairs HP-G
2. Check continuity and resistance in electrical wiring circuits and components with a DMM (digital multimeter) HP-I
3. Check module for communication errors using a scan tool.
4. Check operation of electrically heated mirrors, windshields, back lights, panels, etc.; repair as necessary HP-I
5. Check operation of exterior lighting; determine needed repairs HP-I
6. Check operation of power side windows and power tailgate window HP-G
7. Check operation of retractable headlamp assembly HP-G
8. Check operation of windshield wiper/washer system HP-I
9. Check voltages in electrical wiring circuits with a DMM (digital multimeter) HP-I
10. Demonstrate the proper self-grounding procedures for handling electrical components HP-I
11. Dispose of batteries and battery acid according to local, state, and federal requirements HP-G
12. Exhibit utmost professionalism
13. Identify blower motor circuit operation
14. Identify exterior lighting circuit operation
15. Identify ignition switch operation
16. Identify interior lighting circuit operation
17. Identify potential safety and environmental concerns associated with hybrid vehicle systems.
18. Identify programmable electrical/electronic components; record data for reprogramming before disconnecting battery HP-G
19. Identify safe disabling techniques of high voltage systems on hybrid vehicles.
20. Identify trailer wiring procedures
21. Inspect alignment, adjust, and replace generator (alternator) drive belts, pulleys, and fans HP-G
22. Inspect, clean, and repair or replace battery cables, connectors, and clamps HP-I
23. Inspect, clean, and replace battery HP-I
24. Inspect, remove and replace components of electric door and hatch/trunk lock HP-G
25. Inspect, remove and replace components of electrical sunroof and convertible top HP-I
26. Inspect, remove and replace components of keyless lock/unlock devices and alarm systems HP-G
27. Inspect, remove and replace components of power antenna circuits HP-I
28. Inspect, remove and replace power seat, motors, linkages, cables, etc. HP-G
29. Inspect, test, and replace fusible links, circuit breakers, and fuses HP-I
30. Perform battery state-of-charge test; determine needed service HP-I
31. Perform safety procedures
32. Perform slow/fast battery charge in accordance with manufacturer's recommendations HP-I
33. Perform trailer wiring procedures
34. Remove and replace generator (alternator) HP-I
35. Remove and replace horn(s); check operation HP-G
36. Remove and replace motors, switches, relays, connectors, and wires of retractable headlamp assembly circuits HP-I
37. Repair electrical circuits, wiring, and connectors according to manufacturer's specifications HP-I
38. Troubleshoot exterior lighting circuit
39. Troubleshoot interior lighting circuit
40. Use wiring diagrams and diagnostic flow charts during diagnosis of electrical circuit problems.
41. inspect, test, and repair or replace switches, relays, bulbs, sockets, connectors, and wires of all interior and exterior light circuits HP-I

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

F. Learner Outcomes Assessment
   As noted on course syllabus

G. Special Information
   None noted