



# Wayne County Community College District

## COURSE SYLLABUS

### ABT 131 Introduction to Electrical/Mechanical Repair

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**CREDIT HOURS:** 2.00

**CONTACT HOURS:** 30.00

#### **COURSE DESCRIPTION:**

This introductory course focuses on the basic principles and practices of electrical and mechanical repair when an auto has been damaged due to a collision. The course will introduce the most common mechanical and electrical repair issues required to restore vehicle to pre-collision condition.

**PREREQUISITES:** None

#### **EXPECTED COMPETENCIES:**

*Upon completion of this course, the student will be familiar with:*

1. Check for available voltage, voltage drop and current, and resistance in electrical wiring circuits and components with a DMM (digital multimeter).
2. Repair electrical circuits, wiring, and connectors.
3. Inspect, test, and replace fusible links, circuit breakers, and fuses.
4. Perform battery state-of-charge test and slow/fast battery charge.
5. Inspect, clean, repair or replace battery, battery cables, connectors and clamps.
6. Dispose of batteries and battery acid according to local, state, and federal requirements.
7. Identify programmable electrical/electronic components and check for malfunction indicator lamp (MIL); record data for reprogramming before disconnecting battery.
8. Inspect alignment, adjust, remove and replace alternator (generator), drive belts, pulleys, and fans.
9. Check operation and aim headlamp assemblies and fog/driving lamps; determine needed repairs.
10. Inspect, test, and repair or replace switches, relays, bulbs, sockets, connectors, and wires of interior and exterior light circuits.
11. Remove and replace horn(s); check operation.
12. Check operation of wiper/washer systems; determine needed repairs.
13. Check operation of power side and tailgate window; determine needed repairs.
14. Inspect, remove and replace power seat, motors, linkages, cables, etc.
15. Inspect, remove and replace components of electric door and hatch/trunk lock.
16. Inspect, remove and replace components of keyless lock/unlock devices and alarm systems.
17. Inspect, remove and replace components of electrical sunroof and convertible/retractable hard top.
18. Check operation of electrically heated mirrors, windshields, back lights, panels, etc.; determine needed repairs.
19. Demonstrate the proper self-grounding procedures for handling electronic components.
20. Check for module communication errors using a scan tool.
21. Use wiring diagrams and diagnostic flow charts during diagnosis of electrical circuit problems.
22. Identify safe disabling techniques of high voltage systems on hybrid vehicles.
23. Identify potential safety and environmental concerns associated with hybrid vehicle systems.
24. Check engine cooling and heater system hoses and belts; determine needed repairs
25. Inspect, test, remove, and replace radiator, pressure cap, coolant recovery system, and water pump.



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26. Recover, refill, and bleed system with proper coolant and check level of protection; leak test system and dispose of materials in accordance with EPA regulations.
27. Remove, inspect and replace fan (both electrical and mechanical), fan sensors, fan pulley, fan clutch, and fan shroud; check operation
28. Inspect, remove, and replace auxiliary oil/fluid coolers; check oil levels
29. Demonstrate an understanding of hybrid cooling systems.

#### **ASSESSMENT METHODS:**

Student performance may be assessed by examination, quizzes, case studies, oral conversation, group discussion, oral presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

#### **GRADING SCALE:**

90%-100%	= A
80%-89.9%	= B
70%-79.9%	= C
60%-69.9%	= D
<60%	= E