

Course Objectives/Course Outline
Spokane Community College

Course Title: Diagnosis of Electronic Systems

Prefix and Course Number: AUTO 216

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Have the knowledge to repair/replace fusible links, circuit breakers, and fuses.
- Have the knowledge to properly utilize test equipment in a variety of situations.
- Have the knowledge to perform maintenance procedures on batteries.
- Have the knowledge to repair/replace starter relays and solenoids.
- Have the knowledge to repair/replace switches, connectors, and wires of starter control circuits.
- Have the knowledge to perform current and voltage tests on starter systems.
- Have the knowledge to repair/replace charging system components.
- Have the knowledge to perform voltage regulator adjustments and make needed repairs or replacements.
- Have the knowledge to repair/replace lighting systems accessories.
- Have the knowledge to interact with computers for programming.
- Have the knowledge to repair/replace miscellaneous electrical accessories.

Course Outline:

- I. Electrical Repair
 - A. Circuits
 1. types
 - B. Ohm's Law: usage to compute defective circuits for repair/replacement
 - C. Wiring Diagrams
 - D. Flow Charts
- II. Repair/Replacement of General Electrical Systems Components
 - A. Electrical Circuits
 1. continuity
 2. shorts/grounds/feedback/opens
 3. parasitic loads
 4. fusible links
 5. circuit breakers
 6. fuses
 7. P.T.C. wire protection
 - B. Test Equipment
 1. lab scopes use to verify correct operation after repair

- III. Replacement of Batteries
 - A. Types
 - 1. Conventional
 - a. fast charge
 - 2. Maintenance Free
 - 3. R.V.'s, deep cycle, marine
 - B. Battery Cables, Connectors, Clamps
 - 1. replacement/repair
 - C. Jump Starting to determine needed repairs
 - 1. jumper cables
 - 2. procedures
 - 3. safety
- IV. Starting Systems Repair/Replacement
 - A. Starter Control Units
 - 1. switches
 - 2. connectors
 - 3. wires
 - B. Relays and Solenoids
 - 1. repair procedures, post-testing
 - C. Starter
 - 1. repair, post-testing
- V. Charging Systems Repair/Replacement
 - A. Alternators
 - 1. belts
 - 2. pulleys
 - 3. fans
 - B. Voltage Regulators
 - 1. repair/replacement, post-testing
 - C. Related Wiring
 - 1. repair/replacement, post-testing
- VI. Lighting Systems Repair/Replacement
 - A. Headlights, Parking Lights, Taillights, Backup Lights, Courtesy Lights
 - 1. Repair/Replacement
 - a. dimmer switches
 - b. relays
 - c. sockets
 - d. connectors
 - e. bulbs
 - f. wiring

- VII. Gauges, Warning Devices, and Driver Information Systems
 - A. Repair/Replacement, post-testing
 - 1. Technical Manuals
 - 2. Onboard Computer (BCM)
- VIII. Horn Systems Repair/Replacement
 - A. Horn
 - 1. horn button
 - 2. horn relay
 - 3. connectors
 - 4. circuits
 - B. Wire Repair/Replacement
 - 1. conventional wire repair
 - 2. G.M. weather pak wire repair
 - 3. Toyota wire repair
- IX. Repair/Replacement of Accessories
 - A. Electronic Defogger
 - B. Power Windows
 - C. Power Door Locks
- X. Onboard Computer Systems Repair/Replacement
 - A. Computer Systems
 - B. Sensors
 - C. Electrostatic Charges - eliminating
 - D. Safety
 - E. Antistatic Straps - prevention
- XI. Gauges Repair/Replacement
 - A. Balancing Coil
 - B. Thermo Electric
 - C. Electronic Clusters
- XII. Miscellaneous Accessory Equipment Repair/Replacement Procedures
 - A. Radios
 - B. Noise Suppression Components
 - C. Cigar Lighters
 - D. Power Doorlocks
 - 1. repair/replacement
 - E. Power Windows
 - 1. repair/replacement