

DISL 130-ADVANCED ELECTRICAL 5 CREDITS

SYLLABUS

CATALOG DESCRIPTION

Basic theory of operation and troubleshooting of on and off-highway electrical systems. Systems covered includes batteries, starting and charging systems, lighting circuits, electrical wiring, and monitoring components. Safety will be strictly enforced. A grade of 'C' or better must be earned to receive credit for this course

Prerequisites: DISL 115

Semester Offered: Spring

Common Student Learning Outcomes

Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...

BROAD AND SPECIALIZED LEARNING

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

CRITICAL THINKING

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

CULTURAL AND CIVIC ENGAGEMENT

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

EFFECTIVE COMMUNICATION

Students will exchange ideas and information with clarity in multiple contexts.

INFORMATION LITERACY

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

INTEGRATING TECHNOLOGIES

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

Course Learning Outcomes

1. To provide student with techniques and diagnostic procedures to perform a complete engine performance and drivability evaluation, record discrepancies noted, and perform minor adjustments and repairs. The student will also be capable of performing various diagnostic tests utilizing specialized test equipment to determine additional required repairs.

Specific Learning Objectives

Upon successful completion of the course, the student will be able to...

1. Read interpret and diagnose electronic circuits using wiring schematic/diagrams.
2. Check continuity in electronic circuits using appropriate test equipment.
3. Check applied voltages, circuit voltages, and voltage drops in electrical/electronic circuits using a digital multimeter.
4. Check current flow in electrical/electronic circuits and components using an ammeter.
5. Check resistance in electrical/ electronic circuits and components using an ohmmeter.
6. Find shorts, grounds, and opens in electrical/electronic circuits.
7. Diagnose parasitic battery drain problems.
8. Inspect fusible links, circuit breakers, relays, solenoids, and fuses; replace as needed.
9. Inspect and test spike suppression diodes/resistors; replace as needed.
10. Understand the construction and theory of operation of batteries, charging generators/alternators, electric motors (starters), various lighting devices.
11. Perform battery load test; determine needed service.
12. Determine battery state of charge using an open circuit voltage test.
13. Inspect, clean, and service battery; replace as needed.
14. Inspect and clean battery boxes, mounts, and hold-downs; repair as needed.
15. Inspect, test, and clean battery cables and connectors; repair as needed.
16. Perform starter current draw test; determine needed repairs.
17. Perform start circuit voltage drop test; determine needed repairs.
18. Inspect, test, and replace components and wires in the starter control circuit.
19. Remove and replace starter.
20. Diagnose instrument panel, mounted voltmeters, and/or indicator lamps that show a no charge, low charge, or overcharge condition; determine repair as needed.
21. Diagnose the cause of a no charge, low charge, or overcharge condition; determine repairs as needed.
22. Inspect, adjust, and replace alternator drive belts, pulleys, fans, tensioners, and mounting brackets.
23. Perform charging circuit voltage drop test; determine repairs as needed.
24. Remove and replace alternator.
25. Inspect, repair, or replace connectors and wires in the charging circuit.
26. Diagnose 12/24-volt alternator charging system problems; determine repair as needed.