

# SYLLABUS

COURSE # AND TITLE DIME 215 Advanced Electrical and Driveability # OF CREDITS 5

## CATALOG DESCRIPTION

Study of vehicle/equipment electrical and electronic control and monitoring systems. The diagnosis and repair or replacement of senders, sensors, wiring, electronic control units, utilizing OEM specific test equipment will be covered. Diagnosis and repairs will be performed on various manufacturer's equipment and components. Safety will be strictly enforced.

Semester Offered: Every Spring Semester

Prerequisites: Diesel engine overhaul, basic electrical, and fuel systems.

### *Common Student Learning Outcomes*

*Upon successful completion of San Juan College programs and degrees, the student will...*

<i>Learn</i>	<i>Students will actively and independently acquire, apply and adapt skills and knowledge to develop expertise and a broader understanding of the world as lifelong learners.</i>
<i>Think</i>	<i>Students will think analytically and creatively to explore ideas, make connections, draw conclusions, and solve problems.</i>
<i>Communicate</i>	<i>Students will exchange ideas and information with clarity and originality in multiple contexts.</i>
<i>Integrate</i>	<i>Students will demonstrate proficiency in the use of technologies in the broadest sense related to their field of study.</i>
<i>Act</i>	<i>Students will act purposefully, reflectively, and respectfully in diverse and complex environments.</i>

## GENERAL LEARNING OBJECTIVES

1. To provide the student with techniques and diagnostic procedures to perform a complete engine performance and driveability evaluation, record discrepancies noted, 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 OUTCOMES

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. Perform battery load test; determine needed service.
11. Determine battery state of charge using an open circuit voltage test.
12. Inspect, clean, and service battery; replace as needed.
13. Inspect and clean battery boxes, mounts, and hold-downs; repair as needed.

14. Inspect, test, and clean battery cables and connectors; repair as needed.
15. Perform starter current draw test; determine needed repairs.
16. Perform start circuit voltage drop test; determine needed repairs.
17. Inspect, test, and replace components and wires in the starter control circuit.
18. Remove and replace starter.
19. Diagnose instrument panel, mounted voltmeters, and/or indicator lamps that show a no charge, low charge, or overcharge condition; determine repair as needed.
20. Diagnose the cause of a no charge, low charge, or overcharge condition; determine repairs as needed.
21. Inspect, adjust, and replace alternator drive belts, pulleys, fans, tensioners, and mounting brackets.
22. Perform charging circuit voltage drop test; determine repairs as needed.
23. Remove and replace alternator.
24. Inspect, repair, or replace connectors and wires in the charging circuit.
25. Diagnose 12/24-volt alternator charging system problems; determine repair as needed.

Syllabus developed by \_\_\_\_\_ Date: \_\_\_\_\_

Syllabus reviewed by \_\_\_\_\_ Date: \_\_\_\_\_

**A current syllabus must be on file in the dean's office for every course being taught during a given semester.**