SAN JUAN COLLEGE
Success Matters

# AUTE-114-ELECTRICAL SYSTEMS 6 CREDITS

# SYLLABUS

## CATALOG DESCRIPTION

Diagnosis of the general electrical system to include battery, starting, charging, lighting, gauges, horn, wiper/washer, and accessories using meters and schematics with standard troubleshooting procedures.

Corequisites: AUTE 113 and AUTE 117

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

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

1. To prepare the student for competence in advanced automotive electronics commonly found in modern vehicles.

2. Completion of 100% of NATEF priority 1 tasks.
3. Completion of 85% of NATEF priority 2 tasks.
4. Completion of 75% of NATEF priority 1 tasks.

## Specific Learning Outcomes

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

1. Work with automotive electrical systems safely.
2. Demonstrate knowledge of electrical fundamentals by properly using an amp, volt, and ohmmeter (digital and analog).
3. Diagnose circuits which have conditions such as: shorts, opens and grounds.
4. Inspect and repair electrical connections using accepted manufacturer procedures.
5. Properly utilize all commonly used automotive electrical test equipment.
6. Accurately diagnose and repair automotive lighting circuits.
7. Accurately diagnose and repair automotive horn circuits.
8. Accurately diagnose and repair automotive windshield wiper/washer circuits.
9. Accurately diagnose and repair automotive air bag systems.
10. Perform voltage drop tests on various automotive electrical circuits.
11. Diagnose and repair a low/no charge condition.
12. Diagnose and repair a no crank complaint.
13. Demonstrate knowledge of the strategy based diagnosis process.
14. Explain the difference between DC and AC electricity and list sources for each.
15. Locate and correct an EMI malfunction.
16. Read schematic diagrams and identify probable points of failure and the most efficient test points.
17. Diagnose a faulty data bus, and determine the appropriate repair.
18. Use a simple schematic to isolate an electrical fault in automotive systems.
19. Use the basics of Ohms Law to diagnose automotive electrical circuits
20. Properly use an amp meter or amp probe to measure current in a variety of automotive circuits.
21. Determine when and how to use a test light for diagnosis.
22. Properly utilize a single or dual trace oscilloscope to analyze electronic signals such as sensors, injectors and ignition components.