

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

AUTOMOTIVE TECHNOLOGY 201 – ASEP–ELECTRICAL

4 hours lecture, 6 hours laboratory, 6 units

Catalog Description

General Motors ASEP course to include electrical systems, theory, diagnosis and repair procedures utilizing state of the art equipment. Major topics include electrical laws, batteries, starting and charging systems, wiring diagrams, and introduction to computer controls. Accessory systems such as lighting, power seats, power door locks, cruise controls, electric windows, electronic dashboards, radios, windshield wipers, etc., are also covered. Preparation for ASE and GM certification.

Prerequisite

None

Course Content

- 1) Lecture:
 - a. Introduction and safety
 - b. Laboratory procedures
 - c. Equipment operation
 - d. Basic electrical principles
 - e. Automotive wiring systems
 - f. Electromagnetism
 - g. Storage batteries
 - h. Starting motors
 - i. Charging systems
 - j. Electrical controls
 - k. Accessory systems theory and electrical circuits
 - l. Introduction to computer controls
- 2) Lab:
 - a. Introduction and safety
 - b. Laboratory procedures
 - c. Equipment operation
 - d. Battery servicing and diagnosis
 - e. Starting system diagnosis and repair
 - f. Charging system diagnosis and repair
 - g. Electrical system troubleshooting
 - h. Component replacement
 - i. Electrical diagnosis and repair
 - j. Accessory system diagnosis and repair
 - k. Basic computer system troubleshooting

Course Objectives

Students will be able to:

- 1) Demonstrate standardized safety and hazardous waste handling practices.
- 2) Apply electrical operating theory to diagnosis of vehicle electrical problems.
- 3) Interpret automotive electrical wiring diagrams to aid in the diagnosis of automotive electrical problems.

- 4) Perform wiring and soldering repairs to industry acceptable standards.
- 5) Apply theory of operation and industry accepted diagnostic procedures to the repair of battery, starting and charging systems.
- 6) Utilize test equipment and tools to diagnose automotive electrical systems to prescribed industry standards.
- 7) Utilize manufacturer's repair information and technical service bulletins for accurate diagnosis and repair.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Quizzes, written exams, and hands-on performance exam that measure students' ability to safely identify necessary action or repair, diagnose and measure electrical systems, and perform necessary tasks related to electrical repair.
- 2) Practical exercises that measure students' progress toward mastering tasks related to diagnosis, replacement, repair, testing, and adjustment of electrical related systems and components.
- 3) Skills-based summative assessment that measures students' ability to successfully complete the necessary NATEF tasks related to diagnosis, replacement, repair, testing, and adjustment of electrical systems and components.

Special Materials Required of Student

- 1) Mechanic's hand tool set
- 2) Approved safety glasses

Minimum Instructional Facilities

- 1) Auto tech lab (6 bays)
- 2) Smart classroom
- 3) Various training vehicles

Method of Instruction

- 1) Lecture and demonstration
- 2) Individual assistance

Out-of-Class Assignments

- 1) Reading assignments
- 2) Writing assignments

Texts and References

- 1) Required: To be supplied by the GM ASEP Curriculum Committee
- 2) Supplemental: None

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Demonstrate standardized safety and hazardous waste handling practices using assigned lab sheets and hands-on testing.
- 2) Apply electrical operating theory to diagnosis and repair of vehicle electrical problems using assigned lab sheets and hands-on testing.