

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

Transfer Course A.A. Degree Applicable Course
(check all that apply)

COURSE NUMBER AND TITLE: AT 105 Automotive Electricity

UNIT VALUE: 2 **MINIMUM NUMBER OF SEMESTER HOURS:** 64

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS:

PREREQUISITES: None.

COREQUISITES: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

Auto electrical systems including A.C. generators, batteries, solid-state starters, wiring diagrams, and/or electrical troubleshooting that includes solid-state and low voltage-low amperage systems.

SPECIFIC COURSE OBJECTIVES:

The student will:

1. Use Ohm's law, anticipate and solve novel problems.
2. Analyze and deduct charging and starting systems problems.
3. Evaluate and apply repair principles using wiring diagrams and volt meter.
4. Apply principles of shop safety.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Introduction to Electricity
 - A. Units of the system
 - B. Rules of electrical behavior
 - C. Ohm's Law

- II. Meters and Test Equipment
 - A. Voltmeter
 - B. Ammeter
 - C. Ohm-meter
 - D. Test light
 - E. Oscilloscope

- III. Storage Battery
 - A. Construction
 - B. Maintenance

- IV. Cranking Motor Fundamentals
 - A. Series motors
 - B. Power outputs
 - C. Gear reductions
 - D. Diagnosis
 - E. Disassembly
 - F. Assembly

- V. Generators (AC)
 - A. Basic circuit
 - B. External field excitation
 - C. Three phase
 - D. Diagnosis
 - E. Disassembly
 - F. Assembly

- VI. Electrical Circuits and Lights
 - A. Wiring diagrams
 - B. Fuses and circuit breakers
 - C. Turn signals
 - D. Lights
 - E. Horns
 - F. Electrical accessories

- VII. Introduction to Ignition
 - A. Primary system
 - B. Secondary system

VIII. Review Shop Safety Principles

REQUIRED READING:

Check-Chart. Automotive Electrical and Electronic Systems. 3rd ed. New York: Harper and Row. 1997.

SUGGESTED READING:

Guide to the Automobile Certification Examination. 4th ed. New Jersey: James Hughes, 1997.

Electrical Locator. San Diego, CA: Mitchell, Inc.,. 1968 present.

REQUIRED WRITING:

Laboratory activity reports and homework assignments. Each assignment should constitute approximately 2000 words.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.

Homework assignments are from the textbook. Students are expected to submit written reports covering laboratory activities.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

Lecture, demonstration and hands-on laboratory work are the primary methods; film strips, videos, mock-ups, and simulators are also incorporated.

This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply. (See guidelines for preparation for definitions.)

- telecourse
- mediated instruction
- computer assisted instruction

GRADING POLICY AND STANDARDS (include methods for determining whether the stated objectives have been met by students):

- 40% = Written exams
- 50% = Laboratory , Activity and Written reports
- 10% = Assignments

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes No Number of times course may be taken for credit: 1.

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable.

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SIGNATURES ON FILE
