

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

 X Transfer course X A.A. degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: AP E 102 Electrical Theory, Practice and
Blueprint Reading

UNIT VALUE: 4

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS:

Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: Apprenticeship Electrician 101

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

Study of floor and plot plan; basic blueprint reading and circuit drawing; theory of magnetism; DC and AC generators; motors and transformers; on-the-job safety and first aid, and the electrical code. CSU

SPECIFIC COURSE OBJECTIVES:

The student will be able to:

1. Evaluate simple DC circuits and calculate voltage drops.
2. Apply NEC principles and select wire sizes for low line loss.
3. Explain the theory of magnetism.
4. Accurately draw and explain circuits consisting of 3-way and 4-way switches and return call-bell circuits.
5. Identify electrical shock hazards and how to deduce proper power tool grounding.
6. Analyze floor and plot plan for electrical layout.
7. Compare various types of fastening devices and make selection of appropriate devices for specific applications.
8. Identify blueprint symbols and abbreviations.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Electricity
 - A. Direct Current
 - B. Electro-magnetism (DC)
 - C. Parallel DC Circuits
 - D. Series-Parallel DC Circuits
 - E. Series-Parallel Analog

- II. NEC Code
 - A. Intro to the NEC
 - B. Code Articles
 - C. Code Definitions
 - D. Job Information
 - E. Fastening Devices
 - F. Conductor Terminations
 - G. Safety and Electrical Shock
 - H. Ropes for Rigging
 - I. Boxes and Fittings

- III. Blueprint
 - A. Symbols and Abbreviations
 - B. Working Drawings
 - C. Floor Plans
 - D. Elevation Views
 - E. Sectional Views
 - F. Detail Views
 - G. Trade Information
 - H. Residential Plans
 - I. Electrical Layout

REQUIRED READING:

- Cadick, John and AVO Multi-Amp Institute. Cables and Wiring. Albany, New York: Delmar Publishers, Inc., 1993.
- Hart, George V. Ugly's Electrical References. Houston: United Printing Arts, 1990.
- Herman, Stephen L. Delmar's Standard Textbook of Electricity. Albany, New York: Delmar Publishers, Inc., 1995.
- History and Structure of IBEW. Washington, D.C.: International Brotherhood of Electrical Workers, 1990.
- Klein Tool Handbook. Chicago: Klein Tools, Inc., 1990.
- Mathematics Essential for NJATC Courses. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1994.
- National Electrical Code. Quincy, MA: National Fire Protection Association, 1996.
- NJATC Blueprint Reading. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1993.
- NJATC First Year Student Workbook. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1995.
- NJATC Residential Print Set. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1993.

This is the NECA. Bethesda, MD: National Electrical Contractors Association, 1990.

SUGGESTED READING:

Croft T., and W. Summers. American Electrician Handbook. New York: McGraw-Hill, 1987.

National Electrical Code Handbook. Quincy, MA: National Fire Protection Association, 1992.

REQUIRED WRITING:

Completion of written assignments in student workbook which are at least one paragraph in length.

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.

Completion of reading assignments, student workbook applications and attendance at union and JATC meetings as required.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

lecture
 laboratory
 lecture-laboratory combination
 directed study

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 of determining whether the stated objectives have been met by students):

| | | |
|-----|---------------|------------------|
| 5% | Workbook | A = 90-100 |
| 10% | Participation | B = 83-89 |
| 70% | Unit exams | C = 75-82 |
| 15% | Final exam | F = 74 and below |

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

Yes No _____ Number of times course may be taken for credit: 2

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

CONTACT PERSON: Director, Vocational Programs, Ext. 2286