

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: AP E 105 Introduction to Electronics and Industrial Blueprints

UNIT VALUE: 4

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS:

Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: Apprenticeship Electrician 104.

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

Introduction to basic electronics including examination of semiconductor devices, current and voltage manipulation, applications, and blueprint reading.

SPECIFIC COURSE OBJECTIVES:

The student will be able to:

1. Review DC theory and demonstrate knowledge of Ohms Law, resonance and phase angle calculation.
2. Explain the essentials of American Labor History.
3. Compare and contrast the operation of semiconductor devices, diodes, thyristors, zener diodes, LED's, transistors, diacs, triacs, and mosfets.

4. Evaluate the amplifying characteristics of transistor amplifiers through the construction of circuits and analyzing the resulting operating characteristics.
5. Solve novel problems in the construction of the basic amplifier.
6. Evaluate OP-AMP circuit operation and verify results through circuit measurement and analysis.
7. Apply National Electric Code requirements in establishing and evaluating standards for electrical power installations.
8. Identify and interpret power and lighting circuits from blueprints and will interpret symbols and notes for proper job electrical construction.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Job Information
 - A. American labor history
 - B. Alternating current review
 - C. Kirchoff's law, Thevenin's and Norton's theorem
 - D. Safety
- II. Basic Semiconductor Electronics
 - A. Semiconductors, diodes, zeners, single phase power supplies
 - B. Transducers, transistors
 - C. SCR's, triacs, diacs, UJT
 - D. Mosfets, Jfets, IC's, OP-AMPs, IC timers
 - E. Circuit applications
- III. Blueprints
 - A. Review of industrial blueprints
 - B. Advanced industrial blueprint
 - C. Industrial specifications
- IV. National Electric Code
 - A. General wiring methods
 - B. Selection of appropriate fuses and circuit breakers

REQUIRED READING:

- Alerich, Walter N. and Stephen L. Herman. Industrial Motor Control. Third edition. Albany: Delmar Publishers, 1993.
- Hart, George V. Ugly's Electrical References. Houston: United Printing Arts, 1986.
- Herman, Stephen L. Delmar's Standard Textbook of Electricity. Albany, NY: Delmar Publishers, Inc., 1995.

National Electric Code. Quincy, MA: National Fire Protection Association, 1996.

NJATC Blueprint Reading. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1993.

NJATC Manufacturing Plant Industrial Print Set. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1993.

Quik-Lab III for Basic & Advanced Electronics. Mountain View, CA: Malvino Publishing, 1996.

Rockis. Solid State Fundamentals for Electricians. Homewood, Illinois: ATD Publication, 1993.

Shultz, George Patrick. Transformers and Motors. Carmel, Indiana: Sams, Div. of Prentice Hall Publishing, 1989.

Third Year Student Workbook. Upper Marlboro, MD: National Joint Apprenticeship and Training Committee, 1996.

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 are 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 X

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 X 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