

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 EL 101 – Electrical Lineperson I

UNIT VALUE: 4.0

MINIMUM NUMBER OF SEMESTER HOURS: 72

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: Indentured apprentice to the Imperial Irrigation District's Joint Apprenticeship Committee.

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

Basic mathematical functions and computations as they pertain to electricity and electronics. Introduction to basic principles of electricity, AC/DC circuits, electromagnetism, symbols, schematic diagrams, and fundamental safety skills as they pertain to on-the-job training.

SPECIFIC COURSE OBJECTIVES:

The student will be able to:

1. Practice standard safety procedures appropriate to the power utility industry.
2. Recognize and deal appropriately with hazardous materials in the power utility industry.
3. Manipulate certain mathematical functions pertaining to percentages, fractions, decimals, weights and measurement, algebraic equations, and fundamentals of trigonometry.
4. Employ fundamental computations as they relate to basic electricity and electronics; i.e., impedance, current, resistance, amperage, voltage, and circuitry.

5. Identify and analyze various principles as they apply to electrical theory; i.e., conductors, electrical potential, current impedance, and simple circuits.
6. Apply the fundamentals of magnetism as they pertain to permanent and electromagnets, magnetic flux, and reluctance.
7. Recognize and employ essential electrical symbols and schematic diagrams.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Rules and Regulations
 - A. Industry safety practices
 - B. Hazardous materials
- II. Fundamentals of Mathematics
 - A. Addition and subtraction
 - B. Multiplication and division
 - C. Common fractions, cancellation, and LCD
 - D. Decimals and percentages
 - E. Square root and cube root
 - F. Useful terms and symbols
 - G. Positive and negative numbers
 - H. Calculator functions
 - I. Weights and measurement
 - J. Introduction to algebraic equations
 - K. Applied geometry
- III. Basic Math for Electricity and Electronics
 - A. Introduction to electricity
 - B. Simple electric circuits
 - C. Electrical formulas
 - D. Review of Ohm's Law
 - E. Series circuits
 - F. Parallel circuits
 - G. Review of combination circuits
- IV. Fundamentals of Electricity
 - A. Introduction to basic electricity
 1. Molecular structure of matter
 2. Atoms, electrons, ions, and ionization
 3. Conductors and insulators
 4. Electrical potential
 5. Current
 6. Impedance
 7. Basic circuits
 - B. Electrical symbols
 - C. Review and interpretation of schematic diagrams
 - D. DC circuits
 - E. AC circuits

- F. Electromagnetic induction
 - 1. Magnetism
 - 2. Definition of electromagnetism
 - 3. Field strength
 - 4. Motor action
 - 5. Generators
 - 6. Transformers

REQUIRED READING:

Electrical Lineman Training Committee. Imperial Irrigation District's Lineman Apprenticeship Training Handbook. Imperial, CA: Imperial Irrigation District, 1990.

Singer, Bertand B., and Harry Forster. Basic Mathematics for Electricity and Electronics. 6th edition. New York: Macmillan/McGraw-Hill, 1992.

SUGGESTED READING:

Kurtz, Edwin D., and Thomas M. Shoemaker. The Lineman and Cableman's Handbook. 8th edition. New York: McGraw-Hill, 1992.

REQUIRED WRITING:

Written homework assignments consisting of nine to ten pages in length, which involve problem-solving analyzation in construction measurements.

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.

Outside class assignments will include reading assigned textbooks, handouts, completion of exercises, periodic research, critiquing and analyzing problems, and attending safety meetings.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

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

Group discussion, Videotapes

DISTANCE LEARNING:

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

Yes No

If yes, check all that apply:

- _____ Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- _____ Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- _____ Two-Way Video Conferencing (Two-way interactive video and audio)
- _____ One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- _____ Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

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

Augmented with a performance review to determine if all course objectives have been met –

Class Participation	20%	A = 100-90
Homework	20%	B = 89-80
Laboratory	20%	C = 79-70
Quizzes	20%	F = Below 70
Pre-test/Final exam	<u>20%</u>	
	100%	

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 2A

CONTACT PERSON: Director, Vocational Programs, Ext. 2286

SIGNATURES ON FILE