

**AP DL 797 Drywall/Lather Topics** (.5 - 4)  
Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule.

**Prerequisite:** Indentured apprentice to the Carpenters Joint Apprenticeship and Training Committee for Southern California

Topics in Drywall/Lather. See Class Schedule for specific topic offered. Course title will designate subject covered.

## Electrician (AP E)

A five-year apprenticeship program. Applications for Riverside/San Bernardino/Mono/Inyo counties should apply to the Riverside and San Bernardino Joint Electrical Apprenticeship Training. Committees, 1855 Business Center Drive, San Bernardino, CA 92408. Telephone: (909) 890-1703.

### A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AP E 701 Electrical Trade/Industry/DC/Conduit	4
AP E 702 Electrical Theory/Practice/Blueprint Reading	4
AP E 703 Inductance/Capacitance Theory	4
AP E 704 Transformers/Code Calculations/Conduit	4
AP E 705 Electronic/Industrial Blueprints	4
AP E 706 Grounding/Electrical Services/Connection	4
AP E 707 Motor Control/Pilot Devices/Starters	4
AP E 708 Digital Electronics	4
AP E 709 Mgmt/Alarms/Testing/Wiring	4
AP E 710 Programmable Logic Controllers	4
APWE 713 Electrician Work Experience	16
<b>TOTAL UNITS</b>	<b>56</b>

### COURSE OFFERINGS

**AP E 701 Introduction to the Electrical Trade and Industry, DC Theory and Conduit Bending** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** Completion of the following: (1) One semester of Algebra I with a grade of 'C' or better; (2) Designated tests with a passing grade determined by the appropriate committee; (3) Indentured apprentice to the San Diego Electrical Joint Apprenticeship and Training Committee or the Riverside and San Bernardino Joint Electrical Apprenticeship Training Committee.

Orientation to the electrical industry; introduction to the electrical code fundamentals of wiring methods, fastening devices, electrical conductors, circuits, and voltage.

**AP E 702 Electrical Theory, Practice and Blueprint Reading** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 701

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.

**AP E 703 Inductance and Capacitance Theory and Codeology** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 702

Review of the International Brotherhood of Electrical Workers constitution and local union by-laws. Study of the effects of inductance and capacitance on current and voltage. Application of phase angle calculation and the National Electric Code. Overview of workplace problems due to drug abuse.

**AP E 704 Transformers and Code Calculations, Conduit Bending and Blueprints** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 703

Study of transformers theory, installation, connection and distribution systems. Performing short circuit calculations, selecting of building wire for specific applications, calculating loads for residential and multifamily loads and service feeders. Applying conduit bending principles using mechanical benders to fabricate segmented concentric bends.

**AP E 705 Introduction to Electronics and Industrial Blueprints** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 704

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

**AP E 706 Grounding, Electrical Services, and Transform Three-Phase Connections** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 705

Study of requirements for electrical services installation. Study of electrical grounding including merits, impact on safety, ground fault protection, and identification of grounding system elements and functions.

**AP E 707 Electrical Motor Control, Pilot Devices, Starters and Relays** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 706

Study of controls and circuits, pilot devices, starters, and relays. Includes the analysis and development of circuits, the installation and service of electrical equipment, and the electrical code.

**AP E 708 Digital Electronics** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 707

Introduction to digital electronic technology and electronic equipment. Instruction includes basic digital systems, binary and decimal numbering systems, decision-making logic circuits, Boolean Algebra, flip-flops, counters, shift registers, encoders, decoders, ROMs, DC to AC converters and organization of these component blocks to accomplish manipulation of data.

**AP E 709 Management, Fire Alarms, High Voltage Testing, and Telephone and Security Wiring** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 708

Introduction to management and marketing practices, installation of fire alarm systems and the National Electric Code as it relates to alarm installation and high voltage of telephone wiring and security systems.

**AP E 710 Programmable Logic Controllers** (4)

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in AP E 709

Introduction to basic input/output hardware, processors and memory numbering systems associated with programmable controllers. Instruction includes use of personal computer to create and modify ladder diagrams and relay instructions, using solid state logic elements, counters, and shift registers. Principles of process control are explained and principle components are identified.

**AP E 797 Electrical Topics** (.5 - 4)

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**Prerequisite:** Indentured apprentice to the San Diego Electrical Joint Apprenticeship and Training Committee or the Riverside and San Bernardino Joint Electrical Apprenticeship Training Committee

Concentrated courses on electricity. Course title will designate subject covered.