

Inside Wireman (AP IW)

A five-year apprenticeship program. Study of technical course development and delivery techniques for the electrical trade, utilizing classroom-proven techniques. The student will familiarize him/herself with classroom management, testing and assessment techniques, curriculum development and material presentation based on industry-standard and college level instructional methodologies. Applications for this program should be directed to the San Diego Electrical Training Trust, 4675 Viewridge Avenue, San Diego, CA 92123. Telephone (858) 569-6633, ext. 111.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AP IW 701 Introduction to the Electrical Trade	4
AP IW 702 Electrical Theory, Practice and Blueprint Reading	4
AP IW 703 Inductance and Capacitance Theory	4
AP IW 704 Transformer, Motors, and Motor Controls	4
AP IW 705 Special Electrical Systems	4
AP IW 706 Specialized Electrical Applications	4
AP WE 713 Electrician Work Experience	16
Electives (Select 16 units)	
AP IW 713 Electrical Project Supervision	4
AP IW 714 Electrical Certification Preparation	4
AP IW 716 Photovoltaics	4
AP IW 725 Building Automation Systems	4
AP IW 726 Electrical Construction Practices	4
AP IW 797 Inside Wireman Topics	2 - 4
TOTAL UNITS	56

COURSE OFFERINGS

AP IW 701 Introduction to the Electrical Trade (4)

3 hours lecture - 3 hours laboratory

Prerequisite: One semester of Algebra I with a grade of 'C' or better, designated tests with a passing grade determined by the appropriate committee, and indentured apprentice to the San Diego Electrical Joint Apprenticeship and Training Committee or the Riverside and San Bernardino Joint Electrical Apprenticeship Training Committee. Introduction to the electrical industry, with emphasis on jobsite safety, basic conduit bending, National Electric Code (NEC), sexual harassment, introduction to blueprints, tools and their use. Particular attention will be given to fastening devices, basic mathematics, resistance, voltage, power in DC series, parallel, and combination circuits.

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

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 701

Survey of drug awareness, Union Constitution and Bylaws, parliamentary procedure, test instruments, 3Ø electrical systems, DC and AC power generation, specialized conduit bending techniques, National Electric Code (NEC), solid state devices, blueprint analysis, AC theory, transformers, vector analysis, impedance, voltage, power in AC series, parallel, and combination circuits.

AP IW 703 Inductance and Capacitance Theory (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 702

Study of circuit analysis techniques, power factor, semiconductors, AC system grounding and bonding, ground fault protection systems, overcurrent protective devices (fuse and circuit breakers), test instruments, National Electric Code (NEC), and industrial blueprint analysis.

AP IW 704 Transformer, Motors, and Motor Controls (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 703

Study of real-world application of transformer, motor and motor control concepts utilizing extensive hands-on labs and demonstrations. Students work in foremen-led teams to design, build, and test motor control circuits. Students will gain familiarity with a wide array of test instruments including DMMS, voltage testers, megohmmeters, clamp-on ammeters, capacitance testers and other equipment.

AP IW 705 Special Electrical Systems (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 704

Introduction to telephony and data networks, fire alarm systems, nurse call systems, Programmable Logic Controllers (PLCs), arc-flash protection, and instrumentation concepts, National Electric Code (NEC), and OSHA rules and regulations.

AP IW 706 Specialized Electrical Applications (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 705

Introduction to electrical power quality, CATV and CCTV Systems, security systems, fiber optics, hazardous locations, lighting protection, advanced conduit bending, HVAC principles and controls, blueprints, and leadership skills.

AP IW 713 Electrical Project Supervision (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 706

An overview of all processes required to run a successful job. The class utilizes field trips and speakers to give the student a 360° view of the workplace. Each speaker will bring expertise from the field into the classroom where students will learn the right and the wrong way to organize and run a jobsite.

AP IW 714 Electrical Certification Preparation (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 706

Designed to prepare the student to take the California Electrician Certification Examination (CECE). Provides a review of concepts and principles, but focuses primarily on understanding and applying the national Electric Code (NEC), the set of standards upon which the CECE is based.

AP IW 716 Photovoltaics (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 706

Technologies and installation requirements for photovoltaic systems. Subjects presented in this course are renewable energy construction, renewable energy resources, renewable energy efficiency, and energy savings devices used in construction.

AP IW 725 Building Automation Systems (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 706

Technologies and installation requirements for Building Automation Systems (BAS.) The subjects presented in this course are Building Automation applications and requirements used in the construction of commercial and industrial buildings. This course allows students to practice the technical skills required to successfully install, commission, and verify operation of a wide variety of advanced components, such as photosensors, occupancy sensors, digital dimming networked and wireless control systems, programmable time clocks, and emergency lighting controls. In addition, it comprehensively addresses the requirements, regulations, products and strategies which will enable electricians to master successful, expert, and professional customer relations, installation, and maintenance of Electric Vehicle (EV) and Plug-in Hybrid Electric Vehicle (PHEV) infrastructure.

AP IW 726 Electrical Construction Practices (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 706

The technologies and skill sets required for installing and provisioning the electrical requirements for commercial or industrial facilities. The topics presented in this course include electrical distribution overview, safety, OSHA requirements, shoring, trenching, Sempra Service Guide requirements, rigging, IEEE Standards, Blueprints, CSI Master Format construction specifications and National Electrical requirements for electrical services and distribution systems.

AP IW 797 Inside Wireman Topics (2 - 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.
 Topics in Inside Wireman. See Class Schedule for the specific topic offered.
 Course title will designate subject covered.

Plasterer (AP PL)

A four-year apprenticeship program. Applicants for this program should be directed to the Carpenters Joint Apprenticeship and Training Committee for Southern California, San Diego Carpenters Training Center, 8595 Miralani Drive, San Diego, CA 92126. Telephone (858) 621-2667.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AP DL/AP PL/ AP AC 701 Orientation	1.5
AP DL/AP PL/ AP AC 702 Safety and Health Certifications	1.5
AP DL/AP PL/ AP AC 703 Printreading	1.5
AP DL/ AP PL 705 Basic Lathing	1.5
AP PL 706 Basic Plastering	1.5
AP PL 707 Exterior Plastering	1.5
AP PL 708 DOT and Screed Techniques	1.5
AP PL 709 Interior Plastering	1.5
AP PL 710 Finish Applications	1.5
AP PL 711 Ornamental Plastering	1.5
AP PL 713 Theme Plastering	1.5
AP DL/ AP PL 715 Exterior Insulation Finish Systems (EIFS)	1.5
AP DL/ AP PL 716 Firestop/Fireproofing Procedures	1.5
AP PL 717 Plastering Equipment Application	1.5
AP PL 718 Plastering Equipment	1.5
AP WE 714 Plasterer Work Experience	16
TOTAL UNITS	38.5

COURSE OFFERINGS

AP PL 701 Orientation (1.5)
 1 hour lecture - 1 1/2 hours laboratory

Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee

Note: Cross listed as AP DL 701/AP AC 701

An introduction to the Interior Systems program. Safe and proper use of hand tools, power tools, trade related math, beginning print reading and layout as well as safety certifications. Certifications will include scaffold erector/dismantler (welded frame) and low velocity powder actuated tools.

AP PL 702 Safety and Health Certifications (1.5)
 1 hour lecture - 1 1/2 hours laboratory

Note: Cross listed as AP DL 702/AP AC 702

Instruction in safety and health training that meets the needs of the Interior Systems industry. Content includes certification in Power Industrial Trucks, Aerial Lift, American Red Cross First Aid / CPR/AED, and OSHA 10.

AP PL 703 Printreading (1.5)
 1 hour lecture - 1 1/2 hours laboratory

Note: Cross listed as AP DL 703/AP AC 703

An introduction to the basic visualization skills needed for reading and interpreting construction prints. Demonstration of the significance of views, elevations and the role of specifications as they relate to prints.

AP PL 705 Basic Lathing (1.5)
 1 hour lecture - 1 1/2 hours laboratory

Note: Cross listed as AP DL 705

Presents the basic lathing methods used in the industry for exterior/interior installations. Students will use the skills presented to complete a lathing project as part of this course.

AP PL 706 Basic Plastering (1.5)
 1 hour lecture - 1 1/2 hours laboratory

This course provides a brief history of plastering and a complete picture of what the plastering industry is like today. The importance of good lathing and proper inspection of lathing will be emphasized. Proper hawk and trowel and basic tool use will be demonstrated.

AP PL 707 Exterior Plastering (1.5)
 1 hour lecture - 1 1/2 hours laboratory

An introduction to Portland Cement Plaster (a.k.a. stucco) and the processes involved in completing a plastering job. This course will stress the importance of good workmanship and adherence to proven methods of work. Students will begin to develop mastery of basic plastering tools in this course.

AP PL 708 DOT and Screed Techniques (1.5)
 1 hour lecture - 1 1/2 hours laboratory

This course is designed to teach the importance of plumb and square projects. The students will use 3-4-5 or center line methods to square the project, establish control lines and wall finish lines. The plumbing of the project will be demonstrated through the dotting and screeding portion of instruction. The student will brown up and finish a project using methods of application previously covered.

AP PL 709 Interior Plastering (1.5)
 1 hour lecture - 1 1/2 hours laboratory

An introduction to modern gypsum interior plastering systems. Proper methods of application, proper proportioning and mixing, and good workmanship will be demonstrated in this course.

AP PL 710 Finish Applications (1.5)
 1 hour lecture - 1 1/2 hours laboratory

The course will emphasize three different types of molds, their use and application. Components and production of a mold, how to horse a mold and create inside and outside miters will also be covered.

AP PL 711 Ornamental Plastering (1.5)
 1 hour lecture - 1 1/2 hours laboratory

Prerequisite: A minimum grade of 'C' in AP PL 210

This course is designed to provide instruction and practice in advanced geometric lay out problems. Class project will guide students through each phase of production to produce an elliptical arch, with keystone at the arch apex. The project will introduce students to benching a mold, setting and pointing staff, building a working trammel and successfully running a trammel mold.

AP PL 713 Theme Plastering (1.5)
 1 hour lecture - 1 1/2 hours laboratory

This course is designed to teach the student the basic knowledge and skills required to successfully plan and execute a simple project that requires the use of manufactured rock. A study of real rock formations and the techniques used to copy them will be covered as well as painting and highlighting, required tools, art lay out, and carving techniques.

AP PL 715 Exterior Insulation Finish Systems (EIFS) (1.5)
 1 hour lecture - 1 1/2 hours laboratory

Note: Cross listed as AP DL 715

Introduction to the basic working knowledge and technical skills needed to successfully install Exterior Insulation and Finish Systems EIFS (foam products) to meet industry specifications and standards. Introduction to the proper usage of products and materials will be discussed and used.