

AP IW 116 Photovoltaics (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

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 117 Service Equipment (2)

1½ hours lecture-1½ hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

Presentation of the technologies and skill sets required for installing and provisioning an electrical service for commercial or industrial facilities. Topics presented in this course include electrical distribution overview, safety, OSHA requirements, shoring, trenching, Sempra Service Guide requirements, rigging, IEEE Standards, and National Electrical requirements (Article 230) for an electrical service.

AP IW 118 Test Equipment (2)

1½ hours lecture-1½ hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

The technologies and skill sets required for testing and troubleshooting electrical distribution systems and associated hardware including electric motors and drives. The topics presented in this course include testing procedures, test equipment, testing documentation, lighting and branch circuit analysis and troubleshooting.

AP IW 119 Welding (2)

1½ hours lecture-1½ hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

Basic understanding of cutting torch and electrical resistance welding principles and techniques. Covers safe storage, transportation, and use of acetylene, oxygen, and chemelene (MAPP) gases for cutting, as well as "stick" and wire-feed welding safety and technique. Upon completion of the course students will be able to weld in vertical, overhead and horizontal positions.

AP IW 120 Instructional Leadership I (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

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.

AP IW 121 Programmable Logic Controllers (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106, AP IW 109 and AP IW 112**Note:** May be taken 2 times

Provides an in-depth study of programmable logic controllers (PLC) while examining standard programming languages and common PLC hardware applications. This course focuses on the underlying principles of PLCs and provides practical information on installing, programming, maintaining, and troubleshooting PLCs.

AP IW 122 Fire/Life Safety Systems (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

Introduces students to the code requirements, design concepts, and installation techniques required for an efficiently installed and properly working fire alarm system. Includes an overview of NFPA 70 (NEC) – 2002 edition as it applies to Fire Alarm, an introduction to NFPA 72 – 1999 edition National Fire Alarm Code with overview of Chapters 1 through 9, including Appendix A.

AP IW 123 Instrumentation (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

Provides students with a more advanced understanding of instrumentation and control, covering temperature, pressure, flow, and level detection (process control) systems; their principles of operation, and strategies for installation, maintenance, and troubleshooting of these systems.

AP IW 124 Instructional Leadership II (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

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.

AP IW 125 Building Automation Systems (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

Covers the 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.

AP IW 126 Electrical Construction Practices (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP IW 106**Note:** May be taken 2 times

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 197 Inside Wireman Topics (.5-4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

Note: May be taken 4 times

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.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AP DL/AP PL/ AP AC 201 Orientation	1.5
AP DL/AP PL/ AP AC 202 Safety and Health Certifications	1.5
AP DL/AP PL/ AP AC 203 Printreading	1.5
AP DL/AP PL/ AP AC 204 Advanced Printreading	1.5
AP DL/ AP PL 205 Basic Lathing	1.5
AP PL 206 Basic Plastering	1.5

AP PL 207	Exterior Plastering	1.5
AP PL 208	DOT and Screed Techniques	1.5
AP PL 209	Interior Plastering	1.5
AP PL 210	Finish Applications	1.5
AP PL 211	Ornamental Plastering	1.5
AP PL 212	Plastering Replications	1.5
AP PL 213	Theme Plastering	1.5
AP PL 214	Architectural Wall Finishing	1.5
AP DL/		
AP PL 215	Exterior Insulation Finish Systems (EIFS)	1.5
AP DL/		
AP PL 216	Firestopping Procedures	1.5
AP WE 114	Plasterer Work Experience	16
TOTAL UNITS		40

COURSE OFFERINGS

AP PL 197 Plasterer Topics (.5-4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/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

Note: May be taken 4 times

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

AP PL 201 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 201/ AP AC 201; may be taken 2 times
Introduction to the Interior Systems program. Content includes safe and proper usage of hand tools, power/powder tools, an introduction to trade related math, beginning blueprint reading and layout. Certifications will include Ramset/Red Head or Hilti low velocity power/powder actuated tools and scaffold erector/dismantler (welded frame).

AP PL 202 Safety and Health Certifications (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: Cross listed as AP DL 202/ AP AC 202; may be taken 2 times

Designed to incorporate learning theories, methods and techniques that meet the needs of the Interior Systems industry. Content includes certification in forklift, aerial lift, American Red Cross, First Aid/CPR and OSHA 10.

AP PL 203 Printreading (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: Cross listed as AP DL 203/ AP AC 203; may be taken 2 times

This course is designed to teach the basics of reading, understanding and visualizing the blueprints. Terms, symbols and definitions from several trades will be incorporated. Prints showing both residential and commercial application will be used. Related safety, math and blueprint reading will be covered.

AP PL 204 Advanced Printreading (1.5)

1 hour lecture-1 1/2 hours laboratory

Prerequisite: A minimum grade of 'C' in AP PL/AP AC 203

Note: Cross listed as AP DL 204/ AP AC 204; may be taken 2 times

This course will give the student more in depth training related to on the job conditions. Basic estimating, material take offs and organizing jobs will be included.

AP PL 205 Basic Lathing (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: Cross listed as AP DL 205; may be taken 2 times

Covers standard lath and trim products used in the commercial industry. Methods and techniques presented will provide the basic skills needed to perform metal framing tasks, and substrate and lath installation. Procedures to select, measure, cut and attach various trim beads to fit corners and wall openings will be utilized in lab assignments. Proper leveling and finishing methods will be included and applied in course projects.

AP PL 206 Basic Plastering (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

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 207 Exterior Plastering (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

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 208 DOT and Screed Techniques (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

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 209 Interior Plastering (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

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 210 Finish Applications (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

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 211 Ornamental Plastering (1.5)

1 hour lecture-1 1/2 hours laboratory

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

Note: May be taken 2 times

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 212 Plastering Replications (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

This course is an introduction to three types of brick used in plastering. Attention given to the techniques used to achieve a finished job that looks like the real material it is replacing. Students will also learn masonry terms and study architectural details related to masonry.

AP PL 213 Theme Plastering (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

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 214 Architectural Wall Finishing (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: May be taken 2 times

This course is designed to introduce the sophisticated design elements of architectural wall finishing. Walls as an art form with transitioning color and texture are becoming increasingly popular and are in high demand.

AP PL 215 Exterior Insulation Finish Systems (EIFS) (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: Cross listed as AP DL 215; may be taken 2 times

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.

AP PL 216 Firestopping Procedures (1.5)

1 hour lecture-1 1/2 hours laboratory

Note: Cross listed as AP DL 216; may be taken 2 times

Emphasis on the correct methods, technical skills and firestop materials required to complete a Firestop System. Firestopping is a complete fire containment system designed to prevent the passage of fire, smoke and hot gasses from one side of a rated wall/ceiling assembly to another.

Residential Wireman (AP RW)

A three-year apprenticeship program. Applicants for San Diego/Imperial counties should apply to the San Diego Electrical Training Trust, 4675 Viewridge Avenue, Suite D, San Diego, CA 92123. Telephone: (858) 569-6633, ext. 111.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AP RW 101 Introduction to Residential Wiring Concepts	4
AP RW 102 Electrical Theory, Practice & Blueprint Reading	4
AP RW 103 AC/DC Electrical Theory and Applications	4
AP RW 104 Residential Certification Preparation	4
AP RW 105 Home Technology Integrator I	4
AP RW 106 Home Technology Integrator II	4
AP WE 113 Electrician Work Experience	16
TOTAL UNITS	40

COURSE OFFERINGS

AP RW 101 Introduction to Residential Wiring Concepts (4)

3 hours lecture-3 hours laboratory

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

Note: May be taken 2 times

Introduction to the electrical industry, with emphasis on jobsite safety, basic residential wiring, National Electric Code (NEC), sexual harassment, introduction to blueprints, tools and their use.

AP RW 102 Electrical Theory, Practice & Blueprint Reading (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP RW 101

Note: May be taken 2 times

Survey of drug awareness, Union Constitution and Bylaws, parliamentary procedure, test instruments, National Electric Code (NEC), blueprint analysis, specialty residential wiring systems including telephone, LAN, security, fire alarm and CATV systems.

AP RW 103 AC/DC Electrical Theory and Applications (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP RW 102

Note: May be taken 2 times

Introduction to the electrical industry, with emphasis on jobsite safety, AC and DC theory, National Electric Code (NEC), electric motors, transforms, relays, motor controls, tools and their use. Particular attention will be given to residential lighting, wiring devices, appliance cords/connections, and residential branch circuit wiring.

AP RW 104 Residential Certification Preparation (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP RW 103

Note: May be taken 2 times

This course is designed to prepare the student to take the California Electrician Certification Examination (CECE). The class 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 RW 105 Home Technology Integrator I (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP RW 104

Note: May be taken 2 times

Provides the student with the background necessary to install, troubleshoot, and maintain computer networks, video theater systems, voice networks, CATV networks, and other specialized audio/video systems designed for the home environment.

AP RW 106 Home Technology Integrator II (4)

3 hours lecture-3 hours laboratory

Prerequisite: A minimum grade of 'C' in AP RW 105

Note: May be taken 2 times

Provides the essential networking concepts to permit design and engineering of a residential network and its components. Provides information on home network installations that includes lighting control systems; telecommunication devices; security, access control, home automation controllers; heating, ventilation, and air conditioning control systems; and integration of each. Upon completion of this course students will be prepared to take two CompTIA HTI+ certification exams: Residential Systems and Systems Infrastructure and Integration.

AP RW 197 Residential Wireman Topics (.5-4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

Note: May be taken 4 times

Topics in Residential Wireman. See Class Schedule for the specific topic offered. Course title will designate subject covered.

Sheet Metal (AP SM)

A five-year apprenticeship program. Applicants for this program should be directed to the San Diego Sheet Metal Joint Apprenticeship and Training Committee, 4596 Mission Gorge Place, San Diego, CA 92120. Telephone (619) 265-2758.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AP SM 101 Core I	4
AP SM 102 Core II	4
AP SM 103 Core III	4
AP SM 104 Core IV	4
AP SM 105 Sheet Metal Welding	3
AP SM 106 Plans & Specifications	4
AP SM 107 Construction Plan Problem Solving	4
AP SM 108 Introduction to Basic Refrigeration	4
AP SM 109 Foreman and Project Management Training	4
AP SM 110 Architectural Problem Solving	4
AP WE 110 Sheet Metal Work Experience	16
TOTAL UNITS	55

COURSE OFFERINGS

AP SM 101 Core I (4)

3 hours lecture-3 hours laboratory

Prerequisite: Indentured apprentice to the San Diego Sheet Metal Joint Apprenticeship and Training Committee

Note: May be taken 2 times

An introduction to the basic principles, processes, drawings, materials and practices used in the sheet metal industry.