ANTH 225 Historical Archaeology (3)
2 hours lecture-2 hours lecture/laboratory
Recommended preparation: ANTH 120
Note: May not be taken for Credit/No Credit grading
Transfer acceptability: CSU
Method and theory of historical archaeology, including archival research, artifact identification, and report preparation. Training in the location and interpretation of archival documents, such as Franciscan Mission records, Spanish land grant documents, homestead patents, Sanborn fire insurance maps, assessor's records, and historical topographic maps. Training in the identification of ceramic, glass and metal artifacts and their associated function, method of manufacture, manufacturer, and temporal distribution.

ANTH 296 Special Problems in Anthropology (1,2,3)
3, 6, or 9 hours laboratory
Note: ANTH 296 and 297 may be taken 4 times as Archaeology AA degree electives for a combined maximum of 6 units.
Transfer acceptability: CSU;UC - Credit determined by UC upon review of course syllabus.
An individualized or group project in cultural or physical anthropology of any nature approved by the instructor and under the personal supervision of the instructor.

ANTH 297 Special Problems in Archaeology (1,2,3)
3, 6 or 9 hours laboratory
Note: ANTH 296 and 297 may be taken 4 times as Archaeology AA degree electives for a combined maximum of 6 units.
Transfer acceptability: CSU; UC - Credit determined by UC upon review of course syllabus.
An individualized or group project in archaeology approved by the instructor and under the personal supervision of the instructor.

Apprenticeship Training (AP)

Acoustical Installer, Carpentry, Drywall/Lather, Electrician, Inside Wireman, Plasterer, Residential Wireman, Sheet Metal, Sound and Communication Systems

Contact Occupational & Noncredit Programs for further information.
(760) 744-1150, ext. 2600
Office: AA-138

Associate in Arts Degrees -

AA Degree requirements are listed in Section 6 (green pages).
- Acoustical Installer
- Carpentry
- Drywall/Lather
- Electrician
- Inside Wireman
- Plasterer
- Residential Wireman
- Sheet Metal
- Sound and Communication Sysems Installer
- Sound Technician

Certificates of Achievement -

Certificate of Achievement requirements are listed in Section 6 (green pages).
- Acoustical Installer
- Carpentry
- Drywall/Lather
- Electrician
- Inside Wireman
- Plasterer
- Residential Wireman
- Sheet Metal
- Sound and Communication Systems Installer
- Sound Technician

PROGRAMS OF STUDY

A program for the training of apprentices, consisting of full-time, on-the-job employment plus related classroom instruction.

A CERTIFICATE OF ACHIEVEMENT and/or JOURNEYPERSON TRADE CERTIFICATE will be awarded to students for each program successfully completed. Students who wish to obtain an Associate in Arts Degree may do so by fulfilling the general graduation requirements in addition to the completion of the apprenticeship courses.

A program is maintained for the training of apprentices in the trades as listed. Students who wish to become apprentices should appear before the appropriate Joint Apprenticeship Committee. Training consists of full-time work on-the-job supplemented by related classroom instruction. All students entered in the apprenticeship work experience program are expected to enter AP WE 110. A maximum of 16 units, credit/no credit only, may be earned in Cooperative Work Experience Education, not to exceed 4 units each semester.

Students whose work or attendance is not satisfactory may be dropped from the program by the College, or other corrective measures may be taken by the Joint Apprenticeship Committee. The College grants academic credit for the successful completion of the training program.

Upon completion of the training program, journeyperson trade certificates and college achievement certificates are awarded at a special completion ceremony.

The final digit in the course number indicates that period of apprenticeship.

SAFETY GLASSES - Education Code 32030-32034 requires that safety glasses be worn in those classes where eye damage might occur. Students in such classes will be so informed by their instructors. Glasses are available at the college bookstore.

Acoustical Installer (AP AC)

A three-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 AC 205	Acoustical Ceilings	1.5
AP AC 206	Standard Acoustical Grids	1.5
AP AC 207	Suspended Ceilings	1.5
AP AC 208	Soffits	1.5
AP AC 209	Prefab/Sound Panels	1.5
AP AC 210	Concealed/Glue-up/Staple-up System	1.5
AP AC 211	Compasso	1.5
AP AC 212	Metal Pan and Security Systems	1.5
AP WE 112	Drywall/Acoustical Work Experience	16
TOTAL UNITS		**34**

AP AC 197 Acoustical 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 Acoustical. See Class Schedule for specific topic offered. Course title will designate subject covered.

AP AC 201 Orientation (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: Cross listed as AP DL 201/AP PL 201; may be taken two 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 AC 202 Safety and Health Certifications (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP DL 202/AP PL 202; may be taken two 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 AC 203 Printreading (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP DL 203/AP PL 203; may be taken two 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 AC 204 Advanced Printreading (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: A minimum grade of 'C' in AP AC 203/AP DL 203
Note: Cross listed as AP DL 204/AP PL 204; may be taken two 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 AC 205 Acoustical Ceilings (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in acoustical ceilings, seismic codes and the theory behind them. Practical application in wall molds and trims, ceiling layout and material identification.

AP AC 206 Standard Acoustical Grids (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in acoustical grid installation such as 2 x 4 and 2 x 2 flat "H" pattern, radius, gable and diagonal ceilings.

AP AC 207 Suspended Ceilings (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in the technical skills required to install circular ceilings with drops, drywall suspension grid in both square and circular areas.

AP AC 208 Soffits (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Focus on advanced knowledge and skills required to construct square and slant faced, tapered, concealed, drywall suspension, and sloped soffits.

AP AC 209 Prefab/Sound Panels (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in the technical knowledge and skills required for installation of sound panels and prefabricated wall and ceiling panel systems.

AP AC 210 Concealed/Glue-up/Staple-up System (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in concealed and semi-concealed ceilings and soffits. Both technical knowledge and skills will be used in assembling these ceilings.

AP AC 211 Compasso (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Advanced instruction and application in concealed systems to include installation of air bars, double soffits and compasso. Hand tools are mandatory.

AP AC 212 Metal Pan and Security Systems (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in the technical knowledge and skills needed to work with these "high end" products. Hand tools and gloves are mandatory.

Carpentry (AP C)

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 C 201	Orientation I	1.5
AP C 202	Orientation II	1.5
AP WE 111	Carpentry Work Experience	16
Electives (Select 14 courses)		
AP C 203	Blueprint I	1.5
AP C 204	Blueprint II	1.5
AP C 205	Foundations	1.5
AP C 206	Flatworks	1.5
AP C 207	Tilt-Up	1.5
AP C 208	Wall Forms	1.5
AP C 209	Gang Forms	1.5
AP C 210	Patented Forming Systems	1.5
AP C 211	Architectural Concrete	1.5
AP C 212	Column Forms	1.5
AP C 213	Beam & Deck Forming	1.5
AP C 214	Wall Framing I	1.5
AP C 215	Wall Framing II	1.5
AP C 216	Floor Framing	1.5
AP C 217	Stair Building I	1.5
AP C 218	Stair Building II	1.5
AP C 219	Exterior Details I	1.5
AP C 221	Roof Framing I	1.5
AP C 223	Metal Framing	1.5
AP C 225	Formwork Problems	1.5
AP C 226	Bridge Construction	1.5
AP C 227	Stairs & Ramps	1.5
AP C 228	Stair Trim	1.5
AP C 229	Basic Cabinetry	1.5
AP C 230	Cabinetry Installation	1.5
AP C 235	Residential/Commercial Molding	1.5
AP C 236	Plastic Laminates	1.5
AP C 237	Introduction to Door Hardware	1.5
AP C 238	Wood/Metal Jambs and Pre-hung Doors	1.5
AP C 239	Hinge and Door-Closure Hardware	1.5
AP C 240	Cylindrical and Mortise Locksets	1.5
AP C 245	Commercial Fixtures	1.5
AP C 246	Showcases and Loose Store Fixtures	1.5
AP C 247	Basic Suspended Scaffold	1.5
AP C 248	Advanced Suspended Scaffold	1.5
AP C 249	Basic Systems Scaffold	1.5
AP C 250	Intermediate Systems Scaffold	1.5

AP C 251	Advanced Systems Scaffold	1.5
AP C 252	Basic Frame Scaffold	1.5
AP C 253	Intermediate Frame Scaffold	1.5
AP C 254	Advanced Frame Scaffold	1.5
AP C 255	Basic Tube & Clamp Scaffold	1.5
AP C 256	Confined Space	1.5
AP C 257	Specialty Scaffold Applications	1.5
AP C 258	Scaffold Reshoring	1.5
AP C 259	Scaffold - Printreading	1.5
AP C 260	Scaffold - Advanced Printreading	1.5
AP C 197	Carpentry Topics	1.5
TOTAL UNITS		**40**

COURSE OFFERINGS

AP C 197 Carpentry 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 Carpentry. See Class Schedule for specific topic offered. Course title will designate subject covered.

AP C 201 Orientation I (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: Indentured apprentice to the Carpenters Joint Apprenticeship and Training Committee for Southern California
Note: May be taken 2 times
This course will introduce the use of various hand and power tools used in the trade. Students will be introduced to the history of trade apprenticeships. Construction math and job site safety practices will also be covered.

AP C 202 Orientation II (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: AP C 201
Note: May be taken 2 times
This course will provide the apprentice with various safety competencies. A student will demonstrate the ability to construct a welded frame scaffold to OSHA standards as well as the operation of a lift truck. In addition they will be introduced to blueprints and their use.

AP C 203 Blueprint I (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is the first of two classes in blueprint reading. The course will cover the fundamental functions and structure of blueprints. Construction drawings, line symbols, freehand sketching as well as pictorial drawings will be covered.

AP C 204 Blueprint II (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: AP C 203
Note: May be taken 2 times
This course is the second of two classes in blueprint reading. This course will cover foundation prints, commercial prints, residential prints and estimating. Construction specifications will also be covered.

AP C 205 Foundations (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will focus on the use of concrete in the construction industry. Basic layout techniques will be studied and applied for foundations. Related safety, math and blueprint reading will be covered.

AP C 206 Flatworks (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to show the various applications of forming to include slab-on-grade, driveways and walks, and curb and gutter forms. Related safety, math and blueprint reading will be covered.

AP C 207 Tilt-Up (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to give an overview of the Tilt-up industry. Form techniques and panel hardware will be discussed. Related safety, math and blueprint reading will be covered.

AP C 208 Wall Forms (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will introduce the basic techniques of poured-in-place concrete wood form construction. Related safety, math and blueprint reading will be covered.

AP C 209 Gang Forms (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will present the various applications of pre-fabricated wall forming systems. Related safety, blueprint reading will be covered.

AP C 210 Patented Forming Systems (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Proprietary wall forming systems such as Atlas, EFCO, and Symons are an integral part of the concrete industry. Students will be instructed in the application and rigging of these systems.

AP C 211 Architectural Concrete (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
In this course the forming of poured-in-place columns will be covered, with instruction and practice in both job-built.

AP C 212 Column Forms (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
In this course the forming of poured-in-space columns will be covered, with instruction and practice in both job-built and the proprietary systems, and the shoring and forming of drop heads. Estimating, safety, and rigging of materials will be included. Math and blueprint reading will be covered.

AP C 213 Beam and Deck Forming (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will introduce the use of various wood and patented forming systems used in the construction of concrete beams and decks. Metal beam forms and capitals will be taught in this class. Layout and builders level skills will be used in this class.

AP C 214 Wall Framing I (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course provides an introduction to the theory and practice of wall framing. Students start by learning to read floor plans, and then laying out wall locations, plate and detail, as well as openings and structural connections. Construction math and job site safety practices will also be covered.

AP C 215 Wall Framing II (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: AP C 214
Note: May be taken 2 times
This class covers layout, assembly, and erection of both standard and raked walls. Application of bracing, plumbing and aligning walls will also be covered. Construction math, blueprint reading and job site safety practices will also be covered.

AP C 216 Floor Framing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will cover the layout and construction of both residential and commercial floor framing. The use of building codes and blueprint reading will be covered. Fall protection along with job site and math will also be covered.

AP C 217 Stair Building I (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Stair construction is an integral part of carpenter's trade. This course presents stair theory, related mathematics, code requirements and basic layout stringers, treads and risers. Students will layout, cut and erect a straight-run stair. Blueprint reading and safety will also be covered.

AP C 218 Stair Building II (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: AP C 217
Note: May be taken 2 times
This course builds upon the concepts presented in Stair Building I. This class will teach students about winders, u-shaped and radius stair building, as well as code requirements and mathematical calculations. Blueprint reading and safety will also be covered.

AP C 219 Exterior Details I (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course teaches students to read blueprints related to building exteriors such as elevations, sections, and schedules. Construction of structural and architectural elements such as balconies, fireplaces, bay windows, columns and pop-outs. Blueprint reading, mathematical calculations and safety will also be covered.

AP C 220 Exterior Details II (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: AP C 219
Note: May be taken 2 times
A continuation of Exterior Details I, this course will review the reading of relevant drawings, and include hands-on training in window installation, door and window trim, as well as various sidings and trims. Mathematical calculations and safety will also be covered.

AP C 221 Roof Framing I (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Roof construction is one of the most challenging and satisfying facets of carpentry. This basic course will introduce rafter theory and layout. Students will construct a gable roof using conventional and truss methods. Mathematical calculations for various rafter lengths and safety will also be covered.

AP C 223 Metal Framing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course introduces the student to the technology of metal framing. Tools and materials will be covered along with floor and wall construction, including openings and structural connections, and metal truss roof systems. Mathematical calculations for various rafter lengths and safety will also be covered.

AP C 225 Formwork Problems (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will address form design, material estimating and problems relative to form construction. Related safety, math and blueprint reading will be covered.

AP C 226 Bridge Construction (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is to give an overview of basic bridge construction. Related safety, math and blueprint reading will be covered.

AP C 227 Stairs & Ramps (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to teach the various techniques used to form stairs and ramp structures. Related safety, math and blueprint reading will be covered.

AP C 228 Stair Trim (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Covers a variety of moldings, installation for interior stairs, blueprint, and finish schedules, math and related safety regulations.

AP C 229 Basic Cabinetry (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to basic cabinet construction. Blueprint and finish schedules will be covered as well as related safety and math.

AP C 230 Cabinetry Installation (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Students will learn how to install base and wall-hung cabinets, learn scribing techniques, and how to read blueprint and finish schedules.
Related safety and math will also be covered.

AP C 235 Residential/Commercial Molding (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to various moldings and the specific installation techniques of each. Blueprint, finish schedules, related safety and math will also be covered.

AP C 236 Plastic Laminates (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to the manufacture and installation of plastic laminates on horizontal and vertical surfaces to include instruction in cutting and scribing. Blueprint, finish schedules, and related safety and math will also be covered.

AP C 237 Introduction to Door Hardware (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to doors and door hardware schedules, specifications and manufacturer's catalogs. Fire codes that govern the hardware industry as well as how to identify various door hardware including locksets, closures, hinges, panic hardware and door sweeps etc. Blueprint, finish schedules, and related safety and math will also be covered.

AP C 238 Wood/Metal Jambs and Pre-hung Doors (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to the various types of metal and wood door jambs and instruction on proper assembly. Shop demonstrations will include proper installation and techniques to scribe a new door to an existing jamb. Blueprint, finish schedules, and related safety and math will also be covered.

AP C 239 Hinge and Door-Closure Hardware (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to the selection and installation of proper hinge and door-closure hardware. Blueprints, finish schedules, and related safety and math will also be covered.

AP C 240 Cylindrical and Mortise Locksets (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to proper selection and installation of cylindrical and mortise locksets and exit devises. Students will gain hands-on experience in the proper selection of power tools for installing various types of locksets in commercial and residential properties. Blueprint, finish schedules, and related safety and math will also be covered.

AP C 245 Commercial Fixtures (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course includes print interpretation and fabrication techniques used in the preparation and installation of commercial store fixtures. An emphasis will be placed on accurate measuring, proper hand and power tool use, and safety. Students will calculate materials to create cut lists, and fabricate, assemble and install wall panel and valance fixtures.

AP C 246 Showcases and Loose Store Fixtures (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course includes the basic cabinetmaking skills and construction techniques used in the installation of commercial store fixtures. An emphasis will be placed on measuring, hand and power tool use and safety. Students will interpret prints and material bills for the handling, locating and accurate placement of showcase components and loose store fixtures.

AP C 247 Basic Suspended Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Basic techniques and procedures associated with suspended scaffolds. The terminology and use of scaffold components in a cable suspended configuration will be the focus of this training. Construction practices and safety will be taken into consideration as students erect equipment using project design plans for this cable suspended scaffold.

AP C 248 Advanced Suspended Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Advanced techniques and procedures required when constructing suspended scaffolds supported by structural members. Students will identify the suitable structural components for this application type. The methods used to determine load bearing capability of structural elements will be presented. The hazards and precautionary techniques associated with safely building this type of suspended platform will be the focus of this training.

AP C 249 Basic Systems Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Basic techniques and procedures associated with systems scaffold components. Terminology and components unique to this category of equipment will be discussed. Construction practices and safety considerations will be a major focus of the class. Students will identify and erect equipment using the custom configurations for jobsites where this type of scaffold is most frequently utilized.

AP C 250 Intermediate Systems Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Enhancement of basic system scaffold erecting ability through the application of cantilevered design methods. The variation of standard system construction techniques and procedures necessary to safely erect platforms extending beyond a typical scaffold base arrangement will be covered. Students will apply methods and erect equipment using custom configurations for jobsites where this type of skill is most valuable.

AP C 251 Advanced Systems Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Advanced techniques and procedures required when constructing scaffolds used in industrial boiler installation or repair applications. Students will identify surface obstacles and unique shapes indicative of this application. Students will apply common solutions for bridging voids and following equipment contours to construct the selected industrial simulated scaffold projects.

AP C 252 Basic Frame Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Basic techniques and procedures associated with frame scaffold components. The terminology and components unique to this category of equipment will be discussed. Construction practices and safety considerations will be a major focus of the class. Students will identify and erect equipment using basic configurations suitable for jobsites where this type of scaffold is most frequently utilized.

AP C 253 Intermediate Frame Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Augmentation of basic frame scaffold erecting ability through the introduction of obstacle and height problem solving skills. The variation of standard construction techniques and procedures necessary to accommodate structural, equipment or overhead restrictions will be provided. A major focus of the class will be construction practices and safety considerations. Students will identify and erect equipment using custom configurations for jobsites where this type of skill is most valuable.

AP C 254 Advanced Frame Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Advanced techniques and procedures associated with ground supported frame scaffold. Use of scaffold components for construction of various heavy-duty (industrial) elevated platforms will be the focus of this training. Safety precautions, building procedures and material utilization will be incorporated into the assigned tasks. Students will erect heavy-duty large scale platform scaffolds using project plans and designs for this industrial scaffold application.

AP C 255 Basic Tube and Clamp Scaffold (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Basic techniques and procedures associated with tube and clamp scaffold components and erection methods. The terminology and components unique to this category of equipment will be discussed. Construction practices and safety considerations will be a major focus of the class. Students will identify and erect equipment using the custom configurations for jobsites where this type of scaffold is most frequently utilized.

AP C 256 Confined Space (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in safe access, entry and monitoring methods for confined space. Both CAL-OSHA and Federal OSHA regulation are covered in detail. The importance of a respirator fit test and respiratory protection training are covered in this course.

AP C 257 Specialty Scaffold Applications (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Specialty scaffold applications focusing on ramps, chutes, and mobile towers suitable for light and heavy duty use. Students will identify the characteristics of commercial and industrial scaffold construction. The selected projects for this class will introduce the techniques and procedures used for access/egress, debris handling, and maintenance scaffolds.

AP C 258 Scaffold Reshoring (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Presents modified principles and techniques for the use of shoring equipment in a re-shore application. The importance of uniform loading and alignment of tower/tandem tower configurations will be explained. Students will identify and erect scaffold equipment using three types of configurations suitable for scaffold re-shoring purposes.

AP C 259 Scaffold-Printreading (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Fundamentals of reading construction prints. Scaffold print views, lines, dimensioning methods, symbols and details will be covered. In addition to print interpretation, sketching techniques will be introduced and students will draw several scaffold views incorporating the basic print elements presented during the class.

AP C 260 Scaffold-Advanced Printreading (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Expansion of basic printreading ability to include project take-off, estimation, and layout accuracy. Methods used to determine datum and reference locations will be covered. References will be taken from multi-view drawings and students will evaluate the information to locate and orient scaffold for accurate site placement.

Drywall/Lather (AP DL)

A three-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 205	Basic Lathing	1.5
AP DL 206	Framing Ceilings and Soffits	1.5
AP DL 207	Basic Metal Framing	1.5
AP DL 208	Framing Suspended Ceilings	1.5
AP DL 209	Framing Curves and Arches	1.5
AP DL 210	Light Gage Welding - AWS	1.5
AP WE 112	Drywall/Acoustical Work Experience	16
Electives (Select 3 courses)		
AP DL/AP PL/ AP AC 204	Advanced Printreading	1.5
AP DL 211	Light Gage - L.A. City Certificate	1.5
AP DL 212	Basic Hand Finishing	1.5
AP DL 213	Drywall Acoustical Ceilings	1.5
AP DL 214	Door/Door Frames	1.5
AP DL/ AP PL 215	Exterior Insulation Finish Systems	1.5
AP DL/ AP PL 216	Firestopping Procedures	1.5
AP DL 217	Free-Form Lathing	1.5
AP DL 218	Machine Taping	1.5
AP DL 219	Hand Taping	1.5
AP DL 220	Gypsum Board Application and Finish Trim	1.5
AP DL 221	Advanced Hand Tool Finishing	1.5
AP DL 222	Advanced Machine Tool Finishing	1.5
TOTAL UNITS		**34**

COURSE OFFERINGS

AP DL 197 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, 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 Drywall/Lather. See Class Schedule for specific topic offered. Course title will designate subject covered.

AP DL 201 Orientation (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: Cross listed as AP PL 201/ AP AC 201; may be taken two 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 DL 202 Safety and Health Certifications (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP PL 202/ AP AC 202; may be taken two 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 DL 203 Printreading (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP PL 203/ AP AC 203; may be taken two 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 DL 204 Advanced Printreading (1.5)
1 hour lecture-1½ hours laboratory
Prerequisite: A minimum grade of 'C' in AP DL/AP AC 203
Note: Cross listed as AP PL 204/ AP AC 204; may be taken two 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 DL 205 Basic Lathing (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP PL 205; may be taken 2 times
This course will cover the different styles and techniques of structural framing compared to light gage framing. Proper waterproofing, lath or drywall and trim will be explained, demonstrated and applied to the framing. Related safety, math and blueprint reading will be covered.

AP DL 206 Framing Ceilings and Soffits (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to provide instruction in the basics of framing ceilings and soffits with drywall and lath application. Related safety, math and blueprint reading will be covered.

AP DL 207 Basic Metal Framing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
An in-depth study of basic material identification, print layout, framing, drywall applications and proper trim applications for the Drywall/Lath industry. Safety, math and blueprint reading will be covered.

AP DL 208 Framing Suspended Ceilings (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to provide related classroom instruction with the technical skills and knowledge to successfully frame any suspended ceiling in drywall and lath. Related hand and power tool safety, math and blueprint reading will be covered.

To satisfy a prerequisite, the student must have earned a letter grade of A, B, C or CR in the prerequisite course, unless otherwise stated.

AP DL 209 Framing Curves and Arches (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to teach curves and arches, barrel ceilings, radius walls and soffits. Related hand and power tool safety, math and blueprint reading will be covered.

AP DL 210 Light Gage Welding - AWS (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to teach the practical skills needed for the arc welding processes and applications. Students will have the practical skills to successfully pass the AWS light gage certification. Related safety, codes and materials will be covered.

AP DL 211 Light Gage - L.A. City Certificate (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Assists students in preparing for the Los Angeles City Light Gage Welding Certification. Written and practical skills of the test will be demonstrated and discussed in order to associate the student with the working knowledge necessary to successfully achieve a Los Angeles City Light Gage Welding Certification. Related safety, codes and materials will be covered.

AP DL 212 Basic Hand Finishing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to give the apprentice a full perspective of the finish trade. Blueprint and finish schedules will be covered. The basic gypsum board applications and finish trims will be explored. The various tools used from basic hand tools such as the "bazooka", boxes and nail spotters will also be covered. Related safety and math will be included.

AP DL 213 Drywall Acoustical Ceilings (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course is designed to provide the apprentice with the knowledge and application of Acoustical ceilings, seismic codes and the supporting theory. Wall molds and trims, and ceiling layouts will be covered. Blueprints reading will cover terms, symbols and definitions for both commercial and residential projects. Related safety, math, safety codes and materials will be covered.

AP DL 214 Door/Door Frames (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to the basic installation of door frames and various types of doors. Lock sets, closures, hinges, panic hardware, and door sweeps will be discussed and demonstrated.

AP DL 215 Exterior Insulation Finish Systems (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP PL 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 DL 216 Firestopping Procedures (1.5)
1 hour lecture-1½ hours laboratory
Note: Cross listed as AP PL 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.

AP DL 217 Free-Form Lathing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Introduction to the techniques and skills needed for construction of freeform lath projects. Layout techniques using grids and projection overlay will be presented. Methods for bending and shaping of rebar and pencil rod, lath handling and tying along with welding and cutting techniques will be demonstrated and applied.

AP DL 218 Machine Taping (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Advanced instruction in blueprints and finish schedules and machine parts identification as well as proper use, assembly and breakdown of tools.

AP DL 219 Hand Taping (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in blueprints, specifications and finish schedules, taping techniques, trade terminology and sequences of operations for hand taping.

AP DL 220 Gypsum Board Application and Finish Trim (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in the basics of gypsum board application and finish trims.

AP DL 221 Advanced Hand Tool Finishing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
This course will give more in depth instruction in hand tool use. The different operations, phases and materials to be used in order to have information of what a finished product should look like.

AP DL 222 Advanced Machine Tool Finishing (1.5)
1 hour lecture-1½ hours laboratory
Note: May be taken 2 times
Instruction in the proper methods and sequences of the "bazooka," flat boxes, nail spotters and angle boxes.

Electrician (AP E)

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.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
AP E 101	Electrical Trade/Industry/DC/Conduit	4
AP E 102	Electrical Theory/Practice/Blueprint Reading	4
AP E 103	Inductance/Capacitance Theory	4
AP E 104	Transformers/Code Calculations/Conduit	4
AP E 105	Electronic/Industrial Blueprints	4
AP E 106	Grounding/Electrical Services/Connection	4
AP E 107	Motor Control/Pilot Devices/Starters	4
AP E 108	Digital Electronics	4
AP E 109	Mgmt/Alarms/Testing/Wiring	4
AP E 110	Programmable Logic Controllers	4
AP WE 113	Electrician Work Experience	16
TOTAL UNITS		**56**

COURSE OFFERINGS

AP E 101 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 1 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
Note: May be taken 2 times
Orientation to the electrical industry; introduction to the electrical code; fundamentals of wiring methods, fastening devices, electrical conductors, circuits, and voltage.

AP E 102 Electrical Theory, Practice and Blueprint Reading (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 101
Note: May be taken 2 times
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 103 Inductance and Capacitance Theory and Codeology (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 102
Note: May be taken 2 times
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 104 Transformers and Code Calculations, Conduit Bending and Blueprints (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 103
Note: May be taken 2 times
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 105 Introduction to Electronics and Industrial Blueprints (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 104
Note: May be taken 2 times
Introduction to basic electronics including examination of semiconductor devices, current and voltage manipulation, applications, and blueprint reading.

AP E 106 Grounding, Electrical Services, and Transform Three-Phase Connections (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 105
Note: May be taken 2 times
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 107 Electrical Motor Control, Pilot Devices, Starters and Relays (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 106
Note: May be taken 2 times
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 108 Digital Electronics (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 107
Note: May be taken 2 times
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 109 Management, Fire Alarms, High Voltage Testing, and Telephone and Security Wiring (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 108
Note: May be taken 2 times
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 110 Programmable Logic Controllers (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP E 109
Note: May be taken 2 times
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 197 Electrical 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 San Diego Electrical Joint Apprenticeship and Training Committee or the Riverside and San Bernardino Joint Electrical Apprenticeship Training Committee
Note: May be taken 4 times
Concentrated courses on electricity. Course title will designate subject covered.

Inside Wireman (AP IW)

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.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		**Units**
AP IW 101	Introduction to the Electrical Trade	4
AP IW 102	Electrical Theory, Practice and Blueprint Reading	4
AP IW 103	Inductance and Capacitance Theory	4
AP IW 104	Transformer, Motors, and Motor Controls	4
AP IW 105	Special Electrical Systems	4
AP IW 106	Specialized Electrical Applications	4
AP WE 113	Electrician Work Experience	16
Electives (Select 16 units)		
AP IW 107	Advanced Electronics I	4
AP IW 108	Advanced Electronics II	4
AP IW 109	Advanced Motor Controls	2
AP IW 110	AutoCAD	4
AP IW 111	Electric Motor Drives	4
AP IW 112	Introduction to Computers	4
AP IW 113	Jobsite Supervision	4
AP IW 114	Journeyman Certification Preparation	4
AP IW 115	Low Voltage	4
AP IW 116	Photovoltaics	4
AP IW 117	Service Equipment	2
AP IW 118	Test Equipment	2
AP IW 119	Welding	2
AP IW 120	Instructional Leadership I	4
AP IW 121	Programmable Logic Controllers	4
AP IW 122	Fire/Life Safety Systems	4
AP IW 123	Instrumentation	4
AP IW 124	Instructional Leadership II	4
AP IW 197	Inside Wireman Topics	.5 - 4
TOTAL UNITS		**56**

COURSE OFFERINGS

AP IW 101 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.
Note: May be taken 2 times
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 102 Electrical Theory, Practice and Blueprint Reading (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 101
Note: May be taken 2 times
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 103 Inductance and Capacitance Theory (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 102
Note: May be taken 2 times
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 104 Transformer, Motors, and Motor Controls (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 103
Note: May be taken 2 times
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 105 Special Electrical Systems (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 104
Note: May be taken 2 times
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 106 Specialized Electrical Applications (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 105
Note: May be taken 2 times
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 107 Advanced Electronics I (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106
Note: May be taken 2 times
Comprehensive study of DC circuits, AC circuits and semiconductor power electronic devices and circuits for future applications. Emphasis is placed on schematic interpretation and testing with troubleshooting techniques for electrical and electronic circuits and systems. Integrating theory and lab, this class employs project-based learning techniques and team-based labs to emphasize practical application, teamwork, and communication skills.

AP IW 108 Advanced Electronics 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 the essential concepts of digital electronics by constructing and programming a micro-computer, computer interface, and programmable-robot. A strong emphasis is placed on schematic interpretation and testing and troubleshooting techniques for electrical and electronic circuits and systems.

AP IW 109 Advanced Motor Controls (2)
1½ hours lecture-1½ hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106
Note: May be taken 2 times
Study of advanced techniques for control system installations of motors and related equipment, utilizing field-proven techniques for installation, start-up, control system documentation, and trouble-shooting. Students will become familiar with industry-standard control configurations that are used in a variety of installation scenarios. Specialized control devices will be examined.

AP IW 110 AutoCAD (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106 and a minimum grade of 'C' in AP IW 112
Note: May be taken 2 times
Application of a step-by-step approach to the commands of AutoCAD LT. Topics include application fundamentals, drawing setup, file operations, commands, object properties, dimensioning, menus, drawing management, and AutoCAD LT applications in the electrical trade.

AP IW 111 Electric Motor Drives (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106 and a minimum grade of 'C' in AP IW 109
Note: May be taken 2 times
Comprehensive study of the technology behind and installation requirements for electric motor drives. Topics include motor load analysis, electric motor drive operation fundamentals, drive startup procedures, and drive testing and troubleshooting.

AP IW 112 Introduction to Computers (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106
Note: May be taken 2 times
Instruction in basic computer skills. Topics include basic personal computer design and construction, computer operating systems, and select applications. Internet applications, basic keyboarding, computer peripherals, file structures, and data management techniques will be examined.

AP IW 113 Jobsite Supervision (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106
Note: May be taken 2 times
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 114 Journeyman Certification Preparation (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP IW 106
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 IW 115 Low Voltage (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 technologies and installation requirements for low voltage systems. Subjects presented in this course are Low Voltage Design and Specification Techniques, Fiber Optics, LAN Cabling Systems, IEEE Grounding Requirements for Electronic Equipment, Power Quality to Support Low Voltage Systems, Telephone Systems, Nurse Call, and CCTV.

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 and a minimum grade of 'C' in AP IW 109 and a minimum grade of 'C' in 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
This course is designed to introduce students to the code requirements, design concepts, and installation techniques required for an efficiently installed and properly working fire alarm system. This course 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
This class 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: 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 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	1.5
AP DL/ AP PL 216	Firestopping Procedures	1.5
AP WE 112	Drywall/Acoustical 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-1½ 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-1½ 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-1½ 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-1½ 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-1½ hours laboratory
Note: Cross listed as AP DL 205; may be taken 2 times
This course will cover the different styles and techniques of structural framing compared to light gage framing. Proper waterproofing, lath or drywall and trim will be explained, demonstrated and applied to the framing. Related safety, math and blueprint reading will be covered.

AP PL 206 Basic Plastering (1.5)
1 hour lecture-1½ 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-1½ 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-1½ 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-1½ 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-1½ 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-1½ hours laboratory
Prerequisite: 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-1½ 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-1½ 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-1½ 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 (1.5)
1 hour lecture-1½ 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-1½ 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.

AP SM 102 Core II (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP SM 101
Note: May be taken 2 times
A continuation of basic sheet metal processes as well as an introduction to simple sheet metal forming processes.

AP SM 103 Core III (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP SM 102
Note: May be taken 2 times
An introduction to intermediate sheet metal processes demonstrating job layout, architectural details and construction techniques with problems of unusual complexity and difficulty.

AP SM 104 Core IV (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP SM 103
Note: May be taken 2 times
A continuation of intermediate processes with problems of unusual difficulty and complexity.

AP SM 105 Sheet Metal Welding (3)
1½ hours lecture-4½ hours laboratory
Prerequisite: AP SM 104
Note: May be taken 2 times
An introduction to the basic principles and methods of gas and arc welding used in the sheet metal industry. Includes codes, standards, welding theory and the practical application using prescribed welding procedures and equipment.

AP SM 106 Plans and Specifications (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SM 105
Note: May be taken 2 times
An introduction to the language and organization of plans and specifications for sheet metal projects. Topics will include architectural, structural, mechanical and electrical drawings as well as how to write and implement a change order to plans and specifications.

AP SM 107 Construction Plan Problem Solving (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SM 106
Note: May be taken 2 times
Learn to apply detailing and research skills to create changes to plans and specifications using intermediate process problems of unusual complexity and difficulty.

AP SM 108 Introduction to Basic Refrigeration (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SM 107
Note: May be taken 2 times
An introduction to the physical components and systems of a basic HVAC system as well as hands-on techniques for startup and basic system troubleshooting.

AP SM 109 Foreman and Project Management Training (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SM 108
Note: May be taken 2 times
Overview of the knowledge, skills and abilities required to effectively perform as a foreman and project manager in the sheet metal industry.

AP SM 110 Architectural Problem Solving (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in AP SM 109
Note: May be taken 2 times
Overview of the knowledge, skills, and abilities of advanced architectural project performance.

AP SM 197 Sheet Metal 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 San Diego Sheet Metal Joint Apprenticeship and Training Committee
Note: May be taken 4 times
Topics in Sheet Metal. See Class Schedule for specific topic offered. Course title will designate subject covered.

Sound and Communication Systems Installer (AP SC)

A three-year apprenticeship program. Applicants for this program should be directed to the Riverside and San Bernardino Joint Electrical Apprenticeship Training Committees, 1855 Business Center Drive, San Bernardino, CA 92408. Telephone: (909) 890-1703.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
AP SC 101	Intro to Sound/Communication Trade Industry	4
AP SC 102	Electrical Theory and Practices DC	4
AP SC 103	Electrical Theory and Practices AC	4
AP SC 104	Semiconductor Electronics	4
AP SC 105	Intro to Digital Electronics and Signaling Devices	4
AP SC 106	Management/Alarms/Codes/Circuits	4
AP WE 113	Electrician Work Experience	16
TOTAL UNITS		**40**

Sound Technician (AP SC)

A four-year apprenticeship program. Students will work in the field during the day and attend class in the evenings. Each apprentice is paid for field work with regularly scheduled pay increases based on required work hours and completion of classroom instruction. Upon completion of this program, students will receive a certificate of completion from the California Division of Apprenticeship Standards and Journeyman Sound Technician status in the I.B.E.W. All students must be indentured Sound Technical apprentices to be eligible for the course. Interested applicants from San Diego/Imperial counties should apply to the San Diego Electrical Training Trust, 4675 Viewridge Avenue, Suite D, San Diego, CA 92123. Telephone: (858) 569-6322, extension 111.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
AP SC 101	Intro to the Sound/Communication Trade Industry	4
AP SC 102	Electrical Theory and Practices DC	4
AP SC 103	Electrical Theory and Practices AC	4
AP SC 104	Semiconductor Electronics	4
AP SC 105	Introduction to Digital Electronics	4
AP SC 106	Management/Alarms/Codes/Circuits	4
AP SC 107	Life Safety and Security System Applications	4
AP SC 108	Specialized Systems and Supervision Techniques	4
AP WE 113	Electrician Work Experience	16
TOTAL UNITS		**48**

COURSE OFFERINGS

AP SC 101 Introduction to the Sound and Communication Trade Industry (4)
3 hours lecture-3 hours laboratory
Prerequisite: A minimum grade of 'C' in MATH 50. Completion of designated tests with a passing grade determined by the appropriate committee. Indentured Apprentice to the Riverside, San Bernardino, Mono, and Inyo Counties Sound and Communications Joint Apprenticeship Committee or the San Diego Sound & Communications Joint Apprenticeship Committee
Note: May be taken 2 times
Introduction to the sound and communication industry, electrical code, fundamentals of wiring methods, fastening devices, electrical conductors, circuits, voltage and data communication.

AP SC 102 Electrical Theory and Practices DC (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 101
Note: May be taken 2 times
Study of floor and plot plans, basic blueprint reading and circuit drawing, theory of magnetism, DC and AC generators, motors and transformers, on-the-job safety, first aid, electrical code, telephony and data communications.

AP SC 103 Electrical Theory and Practices AC (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 102
Note: May be taken 2 times
Study of apprenticeship, electrical inductance, capacitance and reactance, including grounded conductors, branch circuits, transformer principles, RCL circuits and filters.

AP SC 104 Semiconductor Electronics (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 103
Note: May be taken 2 times
Study of solid-state electronic theory and components, diodes, transistors, SCR, triacs, diacs, IC amplifiers and op amps.

AP SC 105 Introduction to Digital Electronics and Signaling Devices (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 104
Note: May be taken 2 times
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 SC 106 Management/Alarms/Codes/Circuits (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 105
Note: May be taken 2 times
Introduction to management, installation of security and fire alarm systems, the National Electrical Code as it relates to alarm installation and circuits as applied to alarm systems.

AP SC 107 Life Safety and Security System Applications (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 106
Note: May be taken 2 times
Continuation of digital theory studies. Instruction expands coverage of Life Safety Systems, and introduces the theory and application of Nurse Call Systems and Security Systems with an emphasis on closed circuit television (CCTV) installations.

AP SC 108 Specialized Systems and Supervision Techniques (4)
3 hours lecture-3 hours laboratory
Prerequisite: AP SC 107
Note: May be taken 2 times
Study of specialized building systems including cable television systems (CATV), master antenna systems (MATV), and building automation systems. Training will cover aspects of job administration including personal computer use, job estimating, customer relations, and building system startup procedures.

AP SC 197 Sound and Communication Systems Installer 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 Riverside, San Bernardino, Mono, and Inyo Counties Sound and Communications Joint Apprenticeship Committee or the San Diego Sound & Communications Joint Apprenticeship Committee
Note: May be taken 4 times
Topics in Sound and Communication Systems Installer. See Class Schedule for specific topic covered. Course title will designate subject covered.

Work Experience (AP WE)

AP WE 110 Sheet Metal Work Experience (4)
12 hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: Credit/No Credit grading only; may be taken 4 times
Supervised on-the-job training in the Sheet Metal Trade.

AP WE 111 Carpentry Work Experience (4)
12 hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: May be taken 4 times; Credit/No Credit grading only
Supervised on-the-job training in the Carpentry trade.

AP WE 112 Drywall/Acoustical Work Experience (4)
12 hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: May be taken 4 times; Credit/No Credit grading only
Supervised on-the-job training in the Interior Systems Trade.

AP WE 113 Electrician Work Experience (4)
12 hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: May be taken 4 times; Credit/No Credit grading only
Supervised on-the-job training in the Electrician trade.

AP WE 114 Plasterer Work Experience (4)
12 hours laboratory
Prerequisite: Indentured apprentice to a designated Joint Apprenticeship and Training Committee
Note: May be taken 4 times; Credit No Credit Grading Only
Supervised on-the-job training in the Interior Systems Trade.

Arabic (ARAB)

Contact the Foreign Languages Department for further information.
(760) 744-1150, ext. 2390
Office: F-5

COURSE OFFERINGS

ARAB 101A Arabic IA (3)
3 hours lecture
Note: Covers the first half of first semester Arabic.
Transfer acceptability: CSU; UC
Arabic 101A and 101B are equivalent to the first semester of an elementary level course in Arabic. This elementary level course is a study of the Arabic language and Arabic-speaking cultures, with emphasis on the development of communicative skills and basic structures. This beginning-level course is for students with no previous coursework in Arabic.

ARAB 101B Arabic IB (3)
3 hours lecture
Prerequisite: ARAB 101A or one year of high school Arabic
Note: Covers the second half of first semester Arabic.
Transfer acceptability: CSU; UC
Arabic 101A and 101B are equivalent to the first semester of an elementary level course in Arabic. ARAB 101B is a continuation of ARAB 101A. This elementary level course is a study of the Arabic language and Arabic-speaking cultures, with emphasis on the development of communicative skills and basic structures.