American River College conducts, in cooperation with the local construction unions, a number of apprenticeship programs (most of which can lead to an Associates of Arts degree). An apprenticeship program is a formal system of career training from two to five years that combines paid employment, on-the-job training and job related college level instruction in order to develop highly skilled workers.

Apprenticeship programs are a cooperative effort between the Joint Apprenticeship Training Committee (JATC) and the college. The JATC is composed of representatives from both labor and management from each apprenticeship area and their purpose is to oversee apprenticeship training. All American River College apprenticeship programs are approved by the Division of Apprenticeship Standards of the California Department of Industrial Relations.

Enrollment in an apprenticeship course is limited to registered apprentices, however anyone meeting the apprenticeship requirements can apply for acceptance. Information on admission to apprenticeship programs can be obtained from the local JATC having jurisdiction over the trade in which you are interested. Listed below are the program types and contact persons.

### Carpenter Apprenticeship
The Carpenter Apprenticeship program concentrates on training apprentices to the specific levels required for the construction industry and has been approved by the State of California Department of Apprenticeship Standards. Training emphasis includes safety, blueprint reading, residential and commercial construction processes, building codes, estimation, and various carpentry topics.

**Student Learning Outcomes**

*Upon completion of this program, the student will be able to:*

- Demonstrate safe working practices in a field construction environment.
- Demonstrate proper selection, use, care, preparation, and handling of the carpenter's tools of the trade.
- Analyze, interpret, and apply national building codes relating to carpentry.

- Analyze and interpret residential and commercial construction blueprints.
- Evaluate, layout, and construct various systems such as floor, wall, roof, and concrete form.
- Evaluate and layout a building site using architectural drawings.
- Calculate elevations by using an engineer's rod and various leveling devices.
- Estimate and order material for construction projects.
- Identify and select appropriate materials for each phase of construction.
- Develop interpersonal skills with customers, co-workers, and different trades-workers.
- Plan projects with given information such as blueprints, specifications, and contract documents.

**Career Opportunities**

Upon completion of the Carpenter Apprenticeship degree or certificate, students may find employment in the following sectors: government, residential and commercial construction and maintenance, utilities, and facilities management.

For more information, contact:

**Program Director**
8000 Chadbourne Rd, Suite A
Fairfield, CA  95485
(707) 399-2880

### Requirements Degree or Certificate

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARPT 102</td>
<td>Worker Safety and Tool Skills</td>
<td>1.4</td>
</tr>
<tr>
<td>CARPT 104</td>
<td>The Apprentice and the Trade</td>
<td>2</td>
</tr>
<tr>
<td>CARPT 110</td>
<td>Foundations and Floors</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 112</td>
<td>Structural Framing</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 114</td>
<td>Form Detailing, Construction &amp; Erection</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 120</td>
<td>Exterior Finish</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 122</td>
<td>Interior Finish</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 130</td>
<td>Layout/Leveling Construction Site Practice</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 140</td>
<td>Interior Systems</td>
<td>1.3</td>
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<tr>
<td>CARPT 142</td>
<td>Engineered Structural Systems</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 150</td>
<td>Concrete - Precast and Prestressed</td>
<td>1</td>
</tr>
<tr>
<td>CARPT 160</td>
<td>Blueprint Reading-Residential</td>
<td>1.3</td>
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<tr>
<td>CARPT 162</td>
<td>Blueprint Reading-Commercial</td>
<td>1.3</td>
</tr>
<tr>
<td>CARPT 170</td>
<td>Roof Framing</td>
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<tr>
<td>CARPT 180</td>
<td>Stair Building</td>
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</table>
DRLTH 140  Exterior/Advanced Fire Control System and Partitions
DRLTH 131  Welding II
DRLTH 122  Blueprint Reading III
DRLTH 121  Blueprint Reading II
DRLTH 110  Residential Metal Framing
DRLTH 102  Basic Applications
DRLTH 100  Introduction to the Trade

Associate Degree Requirements: The Carpenter Apprenticeship
Associate in Arts (A.A.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Drywall/Lathing Apprenticeship

The Drywall/Lathing Apprenticeship program concentrates on training apprentices to the specific levels required for the construction industry and has been approved by the State of California Department of Apprenticeship Standards. Training emphasis includes safety, metal framing, blueprint reading, exterior/interior wall finishes, welding, residential and commercial construction process, building codes, estimation, and various construction topics.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- Analyze functions of blueprints, specifications, schedules, and combination circuits.
- Identify different wiring methods for conductors, cables, and conduits.
- Describe functions of blueprints, specifications, schedules, addenda and revisions in construction.
- Describe the function, operation and characteristics of a system and individual components of the system such as burglar alarms, fire alarms, information transport, HVAC, etc.
- Analyze the function, operation and characteristics of a system and individual components of the system such as burglar alarms, fire alarms, information transport, HVAC, etc.

Career Opportunities

Upon completion of the Drywall/Lathing Apprenticeship degree, students may find employment in the following sectors: government, residential and commercial construction and maintenance, utilities, and facilities management. Students may further their career as a licensed contractor.

For more information contact:
Program Director
4421 Pell Drive #B
Sacramento, CA 95838
1-888-315-3098

Requirements for Degree or Certificate 41 Units

DRLTH 100  Introduction to the Trade ........................................... 1.5
DRLTH 102  Basic Applications .................................................. 1.5
DRLTH 105  Mathematics for Drywall/Lathers .......................... 2
DRLTH 110  Residential Metal Framing ...................................... 1.5
DRLTH 112  Doors, Windows, Exterior Systems/Building Documents ...... 1.5
DRLTH 120  Blueprint Reading I .................................................. 1.5
DRLTH 121  Blueprint Reading II .................................................. 1.5
DRLTH 122  Blueprint Reading III .................................................. 1.5
DRLTH 130  Welding I .............................................................. 1.5
DRLTH 131  Welding II .............................................................. 1.5
DRLTH 140  Exterior/Advanced Fire Control System and Partitions ...... 1.5

Electrical Apprenticeship

This program provides instruction in the installation, operation, and maintenance of the electrical distribution systems in commercial and industrial sites. Topics include safety training, AC and DC electrical theory, metering, electronics, use of electrical codes, raceways, conductors, grounding, motors, transformers, fire alarm systems, fiber optics, instrumentation, building automation and heating, ventilating and air conditioning (HVAC) systems.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- Apply commercial and industrial safety procedures on job sites.
- Analyze, interpret and apply national, state and local electrical codes.
- Apply mathematics in calculating AC and DC series, parallel, and combination circuits.
- Identify different wiring methods for conductors, cables, and conduits.
- Analyze functions of blueprints, specifications, schedules, addenda and revisions in construction.
- Describe the function, operation and characteristics of a system and individual components of the system such as burglar alarms, fire alarms, information transport, HVAC, etc.
- Describe functions of instrumentation in industrial process control systems.

Career Opportunities

Upon completion of the electrical program, students may find employment in the following industry sectors: government, commercial and industrial construction and maintenance, utilities, and facilities management. With the degree, students may further their career as licensed contractors.

For more information contact:
Program Director
2836 El Centro Rd.
Sacramento, CA 95833
(916) 646-6688

Requirements for Degree or Certificate 50.7 Units

ELECT 110  Electrical Apprenticeship I ......................................... 5
ELECT 111  Electrical Apprenticeship II ....................................... 3.3
ELECT 120  Electrical Apprenticeship III .................................... 3.3
ELECT 121  Electrical Apprenticeship IV .................................... 3.3
ELECT 130  Electrical Apprenticeship V .................................... 3.3
ELECT 131  Electrical Apprenticeship VI .................................... 3.3
ELECT 140  Electrical Apprenticeship VII .................................. 3.3
ELECT 141  Electrical Apprenticeship VIII .................................. 3.3
ELECT 150  Electrical Apprenticeship IX .................................... 3.3
ELECT 151  Electrical Apprenticeship X .................................... 3.3

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And a minimum of 16 units from the following: ........................................ 16
ELECT 29B Work Experience in Electricians Apprenticehip

Associate Degree Requirements: The Electrical Apprenticeship Associate in Arts (A.A.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

**Electrical Residential Apprenticeship**

This is a three year, six semester certificated Electrical Residential Apprenticeship Program. The program concentrates on training apprentices to the specific levels required for residential and light commercial construction sites and has been approved by the State of California Department of Apprenticeship Standards.

**Student Learning Outcomes**

Upon completion of this program, the student will be able to:

- Apply residential electrical safety procedures to the work-site.
- Analyze, interpret, and apply the National Electric Codes to residential and light commercial construction.
- Analyze and install transformers and control panels.
- Analyze and install low voltage systems such as TV, phone, burglar alarms, and HVAC control wiring.
- Apply electrical mathematics in calculating resistance, voltage, and amperes in AC/DC series, parallel, and series parallel circuits.

**Career Opportunities**

Upon completion of the Electrical Residential Apprenticehip program, students may find employment in the following industry sectors: government, residential, and light commercial construction and maintenance.

<table>
<thead>
<tr>
<th>Requirements for Certificate</th>
<th>18 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELRES 100 Electrical Residential Apprenticeship I</td>
<td>3</td>
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<tr>
<td>ELRES 101 Electrical Residential Apprenticeship II</td>
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<tr>
<td>ELRES 110 Electrical Residential Apprenticeship III</td>
<td>3</td>
</tr>
<tr>
<td>ELRES 111 Electrical Residential Apprenticeship IV</td>
<td>3</td>
</tr>
<tr>
<td>ELRES 120 Electrical Residential Apprenticeship V</td>
<td>3</td>
</tr>
<tr>
<td>ELRES 121 Electrical Residential Apprenticeship VI</td>
<td>3</td>
</tr>
</tbody>
</table>

**Residential/Commercial Electrician Trainee Certificate**

The Residential/Commercial Electrician program provides instruction in the installation, operation, and maintenance of the electrical distribution systems in residential and commercial sites. Topics include safety training, AC/DC electrical theory, metering, electronics, use of electrical codes, raceways, conductors, grounding, motors, transformers, fire alarm systems, fiber optics, and HVAC systems. The program complies with state regulations to become an Electrician Trainee.

**Student Learning Outcomes**

Upon completion of this program, the student will be able to:

- Apply electrical mathematics in calculating AC/DC series, parallel, and combination circuits.

**Requirements for Certificate 28.5 Units**

- ELECT 210 Electrician Trainee I ............................................ 4
- ELECT 211 Electrician Trainee II .......................................... 4
- ELECT 220 Electrician Trainee III ....................................... 4
- ELECT 221 Electrician Trainee IV ....................................... 4
- ELECT 230 Electrician Trainee V ....................................... 4
- ELECT 231 Electrician Trainee VI ...................................... 4
- ELECT 280 Electrical Workers State Certification Preparation .... 4.5

**Ironworker Apprenticeship**

The Ironworker Apprenticeship Program has training for Field Ironworkers and Reinforcing Ironworkers. Training is provided in major ironworker components to Division of Apprenticeship Standards (DAS) guidelines.

For more information contact:
Program Director
3524 51st Ave
Sacramento, CA 95823
(916) 428-7420

**Student Learning Outcomes**

Upon completion of this program, the student will be able to:

- Demonstrate safe working practices in a field construction environment.
- Demonstrate proper selection, use, care, preparation, and handling of fiber lines, steel cables, wire ropes, chains, slings, cranes, ladders, scaffolds and helicopter rigging.
- Perform proper structural steel erection on bridges, overpass-es, and large buildings.
- Collect and analyze uniform building codes (UBC), classifications, plans, schedules, charts, and specifications commonly used in the ironworker trade.
- Describe and apply reinforcing techniques and principles to concrete structures using steel, bar supports, bar splicing, and welding.
- Weld various ferrous metals using common welding processes and safety guidelines.
- Set cable tensions and pre-stress reinforcing steel to industry standards.

**Requirements for Degree or Certificate 41-41.5 Units**

- IW 100 Orientation and History of the Trade ............................ 1.5
- IW 110 Mixed Base ............................................................ 1.5
- IW 120 Rigging ................................................................. 1.5
- IW 130 Reinforcing I .......................................................... 1.5
- IW 131 Reinforcing II/Post Tensioning .................................. 1.5
IW 140  Precast Concrete and Metal Buildings .................. 1.5
IW 150  Welding I .............................................. 1.5
IW 151  Welding II ............................................. 1.5
IW 152  Welding III ............................................. 1.5
IW 160  Lead Hazard ............................................ 1.5
IW 170  Structural I ............................................. 1.5
IW 171  Structural II ............................................ 1.5
IW 180  Architectural/Ornamental I ............................. 1.5
IW 181  Architectural/Ornamental II (1.5) ....................... 1.5-2
or IW 184  Detailing I (2)
IW 182  Architectural/Ornamental III (1.5) ...................... 1.5
or IW 185  Detailing II (1.5)
IW 183  The History of Ironworkers ............................ 2.5

And a minimum of 16 units from the following: ................ 16
IW 298  Work Experience in Ironworkers Apprenticeship (4)

Associate Degree Requirements:
The Ironworkers Apprenticeship Associate in Arts (A.A.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Sheet Metal Apprenticeship
The Sheet Metal Apprenticeship certificate concentrates on training apprentices to the specific levels required for the construction industry and has been approved by the State of California Department of Apprenticeship Standards. Training emphasis includes safety, blueprint reading, residential and commercial processes, building codes, estimation, and various sheet metal topics.

Career Opportunities
Upon completion of the Sheet Metal Apprenticeship certificate, students may find employment in the following sectors: government, residential and commercial construction and maintenance, utilities, and facilities management. Students may further their career as a licensed contractor.

For more information contact:
Program Director
1624 Silica Avenue
Sacramento, CA 95815
(916) 922-9381

Student Learning Outcomes
Upon completion of this program, the student will be able to:
• Demonstrate safe working practices in a field construction environment.
• Demonstrate proper selection, use, care, preparation, and handling of the sheet metal worker’s tools of the trade.
• Analyze, interpret, and apply national building codes relating to sheet metal construction.
• Analyze and interpret residential and commercial construction blueprints.
• Acquire skills and knowledge to make a successful transition to a journey-level position in the sheet metal worker trade.
• Demonstrate the ability to apply mathematical concepts to the sheet metal trade.
• Demonstrate proficiency in the principles, concepts and applications in metal fabrication methods.

Requirements for Degree or Certificate 54 Units

SHME 100  Sheet Metal Apprenticeship I ....................... 3.3
SHME 101  Sheet Metal Apprenticeship II ..................... 3.3
SHME 110  Sheet Metal Apprenticeship III ..................... 3.3
SHME 111  Sheet Metal Apprenticeship IV ..................... 3.3

SHME 120  Sheet Metal Apprenticeship V ....................... 3.3
SHME 121  Sheet Metal Apprenticeship VI ..................... 3.3
SHME 130  Sheet Metal Apprenticeship VII ..................... 3.3
SHME 131  Sheet Metal Apprenticeship VIII ................... 3.3
SHME 140  Sheet Metal Apprenticeship IX ...................... 3.3
SHME 141  Sheet Metal Apprenticeship X ...................... 3.3
SHME 150  Sheet Metal Welding I ............................. 2.5
SHME 151  Sheet Metal Welding II ............................. 2.5

A minimum of 16 units from the following: ...................... 16
SHME 298  Work Experience in Sheet Metal Apprenticeship (1 - 4)

Associate Degree Requirements:
The Sheet Metal Apprenticeship Associate in Arts (A.A.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Sheet Metal Service Technician Apprenticeship
The Sheet Metal Service Technician Apprenticeship Associates of Arts and certificate concentrates on training apprentices to the specific levels required for the heating, ventilation, and air conditioning (HVAC) industries. This program has been approved by the State of California Department of Apprenticeship Standards. Training emphasis includes safety, blueprint reading, residential and commercial processes, building codes, estimation, and various sheet metal topics. It includes the servicing, start-up, and balancing of HVAC systems.

Career Opportunities
Upon completion of the Sheet Metal Service Technician Apprenticeship certificate, students may find employment in the following sectors: government, residential and commercial construction and maintenance, HVAC servicing, utilities, facilities management, and central plant operations. Students may further their career as a licensed contractor.

Student Learning Outcomes
Upon completion of this program, the student will be able to:
• Demonstrate safe working practices in a field construction environment.
• Demonstrate proper selection, use, care, preparation, and handling of the sheet metal worker’s tools of the trade.
• Analyze, interpret, and apply national building codes relating to sheet metal and mechanical construction.
• Analyze and interpret residential and commercial construction blueprints.
• Demonstrate the proper start-up and balancing of different HVAC systems.
• Demonstrate troubleshooting techniques on various HVAC systems.

Requirements for Degree or Certificate 54.2 Units

SHME 100  Sheet Metal Apprenticeship I ....................... 3.3
SHME 101  Sheet Metal Apprenticeship II ..................... 3.3
SHME 110  Sheet Metal Apprenticeship III ..................... 3.3
SHME 111  Sheet Metal Apprenticeship IV ..................... 3.3
SMTEC 100  Sheet Metal Service Technician Apprenticeship I 2.5
SMTEC 101  Sheet Metal Service Technician Apprenticeship II 2.5
SMTEC 110  Sheet Metal Service Technician Apprenticeship III 2.5
SMTEC 111  Sheet Metal Service Technician Apprenticeship IV 2.5
SMTEC 120  Sheet Metal Service Technician Apprenticeship V 2.5
SMTEC 121  Sheet Metal Service Technician Apprenticeship VI 2.5
SMTEC 130  Sheet Metal Service Technician Apprenticeship VII 2.5
SMTEC 131  Sheet Metal Service Technician Apprenticeship VIII 2.5

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SMTEC 140  Sheet Metal Service Technician Apprenticeship IX ........ 2.5
SMTEC 141  Sheet Metal Service Technician Apprenticeship X ........ 2.5
A minimum of 16 units from the following:................................. 16
SHME 298  Work Experience in Sheet Metal Apprenticeship (1 - 4)

Associate Degree Requirements: The Sheet Metal Service Technician
Apprenticeship Associate in Arts (A.A.) Degree may be obtained
by completion of the required program, plus general education
requirements, plus sufficient electives to meet a 60-unit total. See ARC
graduation requirements.

100  Introduction to Apprenticeship   3 Units
Hours: 54 hours LEC
This course provides an introduction to apprenticeship in the electri-
cal, carpenter and sheetmetal trades. Topics include labor history,
workers’ rights, construction computations, safety, traditional and
non-traditional worker originations.

PREAP 111 Introduction to Infrastructure Pre-
Apprenticeship   8 Units
Enrollment Limitation: Students must have a high school diploma and/
or GED
Hours: 72 hours LEC; 216 hours LAB
This course provides an introduction to transportation infrastructure
apprenticeship. It covers tools, equipment, materials, and techniques
used for building roads, bridges, levees, and rail. Topics also include
job safety, physical requirements for different job sites, employability
skills for apprenticeship, and California apprenticeship laws. Field
trips are required.

PREAP 122 Pre-Apprenticeship for Utility Workers   10 Units
Hours: 130 hours LEC; 153 hours LAB
This course provides entry-level employment skills for the utility
industry. Topics include applications of electronic, electrical, and gas
principles and their applications in the utility industry. It also covers
safety as applied to utility workers, computerized work orders, and
two-way radio communication. Additionally, reading, interpreting,
and applying technical information to solve work-related problems
are presented. Field trips are required.

ELECT 280 Electrical Workers State Certification
Preparation   4.5 Units
Advisory: Three years or more of electrical trade experience.
Hours: 81 hours LEC
This is a preparatory course for the Electricians’ State Licensing
Certification for California. It reviews basic electrical formulas and
provides an in-depth review of the National Electrical Code. This
course may be taken four times for credit to comply with California
code regulations.