



## **BUILDING INDUSTRY TECHNOLOGY ACADEMY**

A program promoted by the  
California Homebuilding Foundation

# **YEAR TWO**

## **Study of Modern Craftsmanship and Infrastructure**

The Study of Ancient Civilization Infrastructure and Craftsmanship course is designed to gain an in-depth understanding of the history behind construction, materials, and trades in the industry. Students will use Primary Sources and become Construction Historians as they reconstruct the advancement of the trades, materials, and tools that are now being used in residential and commercial construction. The course covers a more advanced knowledge of safety, use of hand and power tools, blueprint reading, geometry, and estimating. Integrated throughout the course are foundation standards, which include communication, ethics, interpersonal/team skills, critical thinking and other employment skills needed for the 21st Century. Upon completion of this course, students will be able to perform the duties of an entry-level building construction technician with the knowledge of Construction Codes and general and trade-specific terminology.

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# **YEAR 2: Scope and Sequence**

## **UNIT 1: History of Architecture and Building Codes**

**Estimated Number of Class Periods: 7**

**Learning Objectives:**

- Identify styles of windows, doors, and roofs
- Identify styles of homes where they live
- Transform a current architectural style to another by changing key elements
- Define a building code
- Trace the history of building codes
- Identify the three dominant model codes of the past century
- Describe the ICC, IBC, IRC and CBC

## **UNIT 2: Geometry**

**Estimated Number of Class Periods: 58**

**Learning Objectives:**

- Understand the angle relationships in parallel lines
- Establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles
- Use models and diagrams to explain the Pythagorean Theorem
- Determine the distance between two points on a coordinate plane using the Pythagorean Theorem
- Analyze given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
- Apply mathematics to problems arising in everyday life, society, and the workplace
- Work cooperatively with others

## **Unit 3: History of Wood and Steel Frame Construction**

**Estimated Number of Class Periods: 10**

**Learning Objectives:**



- Describe the four major types of wood house framing that have been used in America since colonial times
- Understand the progression of wood framing from colonial times to now
- Trace the history of steel in construction to light gauge steel
- Understand the advantages and disadvantages of using wood or light gauge steel in certain situations

## **UNIT 4: Framing Floor**

**Estimated Number of Class Periods: 20**

### **Learning Objectives:**

- Write a check
- Use decimals in the accurate keeping of an accounting ledger
- Calculate area
- Use the Pythagorean Theorem to establish/check layout and framing for square
- Develop a bill-of-materials using linear measurement, perimeter, and area to estimate materials quantities
- Layout and construct a scale model floor frame using blueprints
- Identify the name and purpose of the members involved in the construction of stick framed walls, and how they are assembled
- Assemble a floor frame using the correct materials in the correct order
- Assess floor framing adherence to code, cleanliness, and accuracy (compared to the prints and to scale)

## **UNIT 5: Framing Wall**

**Estimated Number of Class Periods: 6**

### **Learning Objectives:**

- Identify the 12 primary members of a wood stick-framed wall
- Layout and construct model home walls from blueprints
- Correctly spell and use the terminology associated with wood wall framing
- Assess scale model wall framing; adherence to code, cleanliness, squareness, and accuracy (compared to the prints and to scale)
- The name and purpose of the members involved in the construction of wood stick-framed walls, and how they are assembled
- The order of construction in preparation for, and the processes of wall framing.
- What properly constructed wall sections look like
- The name and purpose of the members involved in the construction of stick-framed walls, and how they are assembled



## **UNIT 6: Framing Roof**

**Estimated # of Class Periods: 20**

**Learning Objectives:**

- Layout, and construct a conventionally stacked roof in 1" scale from blueprints
- Correctly spell and use the terminology associated with wood wall framing
- Assess scale model roof framing; adherence to code, cleanliness, squareness, and accuracy (compared to the prints and to scale)
- Identify the name and purpose of the members involved in the construction of a conventionally stacked roof, and how they are assembled
- Identify properly constructed roof sections

## **UNIT 7: Electrical**

**Estimated # of Class Periods: 16**

**Learning Objectives:**

- Understand the progress of using electricity in housing.
- Develop and apply basic skills in electrical wiring work.
- Find at least three codes in the NEC that govern electrical construction.
- Discover Ohm's Law and its effects.
- Students practice calculating current, resistance, and voltage using the Ohm's law formula.
- Given the power equation, students will perform calculations to find the power consumed in a circuit or load.
- Name and identify electrical symbols while reading electrical plans
- Layout and install a circuit from blueprints.
- Identify the tools and equipment used by electricians today.
- Define terms related to electrical safety.
- Identify electrical wiring tools and materials.
- Demonstrate safe working procedures in a construction and shop/lab environment.
- Work cooperatively as a member of a team.
- Explain the purpose of OSHA and how it promotes safety on the job.
- Identify electrical hazards and how to avoid or minimize them in the workplace.
- Discern facts from expository text
- Using a rubric assess peer's work
- Write a written summary explaining what work had been done successfully and what work needed to be redone.
- Write a reflection on their own work, whether it was positive or negative, and what needs to be changed.