

## FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



### **BITA 1 - Foundation of Residential and Commercial Construction**

<b>Board Approval Date: November 21, 2019</b>	<b>Course Length: 2 Semesters</b>
<b>Grading: A-F</b>	<b>Credits: 5 Credits per Semester</b>
<b>Proposed Grade Level(s): 9, 10, 11, 12</b>	<b>Subject Area: Elective Elective Area (if applicable): Career Technical Education</b>
<b>Pre-requisite(s): N/A</b>	<b>Co-requisite(s): N/A</b>
<b>CTE Sector/Pathway: Building and Construction Trades / Residential and Commercial Construction</b>	
<b>Intent to Pursue 'A-G' College Prep Status: Yes</b>	
<b>A-G Course Identifier: (g) College-preparatory elective</b>	
<b>Graduation Requirement: No</b>	
<b>Course Intent: District Course Program (if applicable): CTE</b>	

#### **COURSE DESCRIPTION:**

The BITA Year-One Foundation of Residential and Commercial Construction course is designed to teach basic skills in the construction trades. This course is rich in connections to construction with projects that will generate interest in math and increase students' likelihood of success in the industry. The course covers basic construction math: measurement and scale, reading of blueprints, safety protocols, and the procedural use of hand and power tools. Students acquire skills through the use of technology and real world problem solving in the field. Integrated throughout the course are foundation standards, which include communication, ethics, critical thinking and interpersonal/team and employment skills needed for the 21st Century.

**DETAILED UNITS OF INSTRUCTION:**

<b>Unit Number/Title</b>	<b>Unit Essential Questions</b>	<b>Examples of Formative Assessments</b>	<b>Examples of Summative Assessment</b>
<b>1. Orientation and Safety</b>	<p>What is the general shop safety practices and expectations?</p> <p>What is the different types and components of graphs?</p> <p>What are some of the various strategies in the interpretation of information presented visually?</p> <p>How do you use data analysis/statistics to generalize about occupational safety in differing fields?</p> <p>What are commonly used in the analysis of data and statistics?</p> <p>What are key factors that facilitate effective group/team operation?</p>	<p>*Activities demonstrating knowledge of a safe attitude</p> <p>*Math worksheets on percentages, averages, ratios</p> <p>*Answer questions concerning occupational safety based on graphic information</p>	<p>*Create a visual graphic organizer/poster/flyer presenting data and statistics on occupational safety</p> <p>*Quiz on safety</p>
<b>2. Measurement</b>	<p>What are five major math disciplines used in the construction industry?</p> <p>How do you identify and correctly spell measurement terminology?</p> <p>What are proper/improper fractions and mixed numbers?</p> <p>How do you convert improper fractions and mixed numbers back and forth?</p> <p>How do you identify the least common denominator and borrow from whole numbers in the addition and subtraction of fractions?</p> <p>How do you convert fractions into decimals?</p>	<p>*Activities in determining both standard and metric units for any given length using a tape measure</p> <p>*Calculate measurements to understand the interdependence between algebra and geometry in construction</p> <p>*Measurement activities to calculate lengths using fractions, mixed numbers, and percentages</p>	<p>*Quiz on proper improper fractions, mixed numbers, least common denominator, conversion of fractions into decimals</p>

	How do you add any two mixed numbers using only a tape measure?		
<b>3. Scale</b>	<p>Define and list meaning of the words scale, ratio, proportion, and scale factor.</p> <p>How do you measure lengths in a given scale using an architect's rule/scale?</p> <p>How do you read a scale drawing?</p> <p>How do you find a scaling factor when scaling an object?</p> <p>How do you apply measurement procedures in context and then translate those measurements to a scale drawing?</p> <p>Why is a scale drawing a two-dimensional drawing that accurately represents an object and is mathematically like the object?</p>	<p>*Vocabulary activity</p> <p>*Measurement activities use rule and scale</p> <p>*Build a three-dimensional object based on two-dimensional drawings using Google SketchUp (3-D modeling program)</p>	<p>*Build to scale a model tiny house that includes floor, walls, windows and door</p>
<b>4. Wood, Fasteners, and Tools</b>	<p>What are tree species and how do you recognize a hard or soft wood based on the physical properties of the tree?</p> <p>How do you identify the three basic steps involved in turning a tree into lumber?</p> <p>What is the history and development of glues, nails, and screws; what are their attributes and applications?</p> <p>Identify five types of nails/brads (common nail, sinker, finish nail, brad (nail), and the pin).</p> <p>What are the major</p>	<p>*Taking notes using Cornell Notes</p> <p>*Laboratory Activities: Identify five types of nails/brads (common nail, sinker, finish nail, brad (nail), and the pin)</p> <p>*Demonstrate the proper use of the major woodworking hand tools</p>	<p>*Interactive exam on raw materials, development, attributes and use of nails, screws and hand tools</p>

	woodworking hand tools and their proper function/use? How do you obtain and apply information found in working drawings to a given project?		
<b>5. Power Tool – Table Saw</b>	What are the major components of a table saw and their purpose? What is the major components of a radial-arm saw and purpose? What is the major use and operation of a radial-arm saw?	*Demonstrate the safe operation of a table saw and radial-arm saw	*Project: Build a toolbox from wood using both table and radial-arm saws
<b>6. Power Tool – Band Saw</b>	What is the major components of the band saw and its purposes? What is the proper use and operation of the sand saw?	*Demonstrate the safe operation of a band saw	*Interactive exam
<b>7. Power Tool – Miter Saw</b>	What are the major components of the miter saw, and its purpose? What are the common uses of a miter saw in the field of construction?	*Demonstrate the safe operation of miter saws	*Project: Build a picture frame using a miter saw
<b>8. Machine Project #1</b>	How do you correctly identify blueprints, blue lines, and CAD prints? What information do you need to use from a schematic or working drawing? How do you develop a bill-of-materials?	*Demonstrate ability to identify blueprints and its components *Create a bill-of-materials	*Project: Build a three-dimensional object based upon two-dimensional drawings
<b>9. Power Tools-Drill, Router, &amp; Sander</b>	What are the major components of a router, disc and palm sanders, and cordless driver/drill? What are the six primary drill bits (twist, auger, forstner, spade/butterfly,	*Demonstrate the safe operation of each tool (router, disc, palm sander and cordless driver/drill) *Identify and describe the six primary drill bits (twist, auger, forstner,	*Interactive quiz on tools, drills, routers and sanders.

	<p>hole saw, and self-feed) used for in the construction industry?</p> <p>What are the three basic router bits (mortising [straight], round-over and rabbeting) that are used in the shop?</p>	<p>spade/butterfly, hole saw, and self-feed) that are used in the construction industry, and describe their uses</p> <p>*Identify the three basic router bits (mortising [straight], round-over, (rabbeting) and their uses used in the shop</p>	
<b>10. Machine Project #2</b>	<p>How do you correctly identify blueprints, blue lines, and CAD prints?</p> <p>How do you obtain necessary information needed from a schematic or working drawing?</p> <p>How do you develop a bill-of-materials?</p>	<p>*Demonstrate an ability to identify blueprints and its components</p> <p>*Create a bill-of-materials</p>	<p>*Project: Build an advanced three-dimensional object based on two-dimensional drawings</p>
<b>11. Jigsaw and Scroll Saw</b>	<p>What are the major components on jigsaw and a scroll saw?</p>	<p>*Demonstrate the safe operation of a jigsaw and scroll saw</p>	<p>*Project: Build a jigsaw puzzle</p>
<b>12. Pneumatics: Nailers, Staplers, and Compressors</b>	<p>How do you safely operate pneumatics, nailers, staples and compressors?</p> <p>What are the different types of nailers and staplers and what are their uses?</p>	<p>*Demonstrate the safe operation of each tool (pneumatics, nailers, staplers and compressors)</p> <p>*In a group, demonstrate at least three uses for each type of tool</p>	<p>*Interactive Quiz - Identify and describe the different types of nailers and staplers that are used with wood</p>

### **ESSENTIAL STANDARDS:**

D1.0 Recognize the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry.

D2.0 Apply the appropriate mathematical calculations used in the construction trades.

D3.0 Interpret and apply information from technical drawings, schedules, and specifications used in the construction trades.

D6.0 Demonstrate carpentry techniques for the construction of a single-family residence.

D9.0 Understand, integrate, and employ sustainable construction practices in the building trades.

D11.0 Demonstrate skills necessary to complete an electrical system in a single-family residence in accordance with accepted industry standards.

### **RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:**

**Link to Common Core Standards (if applicable):**

Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.

<https://www.cde.ca.gov/be/st/ss/documents/finalelaccsstandards.pdf>

**Link to Framework (if applicable):**

Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which also reviews and recommends textbooks and other instructional materials to be adopted by the SBE.

**Link to Subject Area Content Standards (if applicable):**

Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.

<https://www.cde.ca.gov/ci/ct/sf/documents/ctescrpflyer.pdf>

<https://www.cde.ca.gov/ci/ct/sf/documents/buildingconstruct.pdf>

**Link to Program Content Area Standards (if applicable):**

Program Content Area Standards applies to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

<https://www.cde.ca.gov/ci/ct/sf/documents/buildingconstruct.pdf>

**TEXTBOOKS AND RESOURCE MATERIALS:****Textbooks**

Board Approved	Pilot Completion Date (If applicable)	Textbook Title	Author(s)	Publisher	Edition	Date
		N/A				

**Other Resource Materials**

California Homebuilding Foundation ([mychf.org/bita](http://mychf.org/bita))

Sacramento Regional Builders Exchange (SRBX)

CREATE Mentoring Program (<https://www.srbx.org/create-mentoring-program.html>)

SkillsUSA Career Essentials (<https://www.skillsusa.org/programs/career-essentials>)

**Supplemental Materials**

Board approved supplemental materials (Including but not limited to: Film Clips, Digital Resources, Supplemental texts, DVDs, Programs (Pebble Creek, DBQ, etc.):

N/A

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