

# **FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT**

## **Construction Management**

**DATE: January 2012**

**SUBJECT AREA: Industrial Technology**

**PROPOSED GRADE LEVEL(S): 10<sup>th</sup> - 12<sup>th</sup>**

**COURSE LENGTH: One Year**

**GRADING: A-F**

**NUMBER OF CREDITS: 5 per Semester**

**PREREQUISITES: C or better in Construction 1**

### **COURSE DESCRIPTION:**

Students are introduced to construction and home building management. Students will be the foremen on the Construction Worksite. They will manage the building process from the ground up as the students enrolled in the Construction 1 class build a residential structure. Age-appropriate activities are designed for students to construct a residential building using a variety of materials, equipment, and constructive processes. Design, planning, and manipulative activities will be an integral part of the course. Safety is emphasized throughout the course in the use of hand tools and power equipment. All students will benefit from this course regardless of their respective learning styles, learning rates, or gender.

In integrated and fully contextualized construction students will:

- Learn safety, problem solving, machine and tool use, and drawing interpretation. Safety is emphasized throughout the course in the use of hand tools and power equipment.
- Design, planning, and manipulative activities will be an integral part of the course.
- Be exposed to practical skills in building and carpentry trades by constructing a home.
- Utilize technology in an effort to further study energy conservation and green building techniques.
- Understand and exploit the interdependence between algebra and geometry.
- Learn common core set of geometry skills that are utilized in construction on an ongoing basis.

### **GENERAL GOALS/PURPOSES:**

Students will be introduced to the analysis and management of construction projects in terms of the work that must be performed in the construction process. Students will analyze operations and methods using concepts and techniques that are applicable to all types of projects in all segments of the industry, variables affecting productivity. Students will study the basic approaches to estimating the cost of construction projects from a managerial viewpoint. Students will study how construction contractors manage cost, time, scope, and quality. Safety is an integral part of project and operations management.

### **STUDENT READING COMPONENT:**

Students will locate, understand, and interpret written information in documents such as manuals, graphs, safety instruction and textbooks. Construction will place a heavy emphasis on vocabulary and its role in developing an axiomatic system. As students develop their ability to create a formal logical argument, they will also be developing their ability to read analytically.

### **STUDENT WRITING/ORAL COMPONENT:**

Students will communicate thoughts, ideas, information, and messages in writing through letters, directions, reports, graphs, and flowcharts. Students will communicate orally in giving directions to a project and short presentations. Additionally, students will have opportunities to express their understanding of a variety of construction concepts in writing as well as orally presenting work to the class. All written work will follow standard rules of English.

## **DETAILED UNITS OF INSTRUCTION:**

This course will focus on the managerial aspect of the following units as students have a hands-on role in managing the construction of the house they helped build in the previous school year.

### **Unit 1: Construction Planning**

Construction planning is a fundamental and challenging activity in the management and execution of construction projects. It involves the choice of technology, the definition of work tasks, the estimation of the required resources and durations for individual tasks, and the identification of any interactions among the different work tasks. Management students will be responsible for delegating work cards to Construction students groups.

### **Unit 2: Introduction to the Shop and this Year's Building**

Management students will introduce the Construction students to the classroom, location of tools, safety issues and instruction and the design of our structure. They are there to monitor safety and organizational issues.

### **Unit 3: Framing the Walls**

As the Construction Students utilize key concepts in Geometry to layout and construct the walls of the structure, the Management Students will act as foreman on the jobsite. They will oversee the construction as well as report to the teachers the anticipated time of completion of each project.

### **Unit 4: Laying the Foundation (Floor)**

Our "foreman" will guide the students in laying out and constructing the floor of our building. Depending on the construction, this will involve installing drainage, plumbing, ductwork and electrical. Foreman will be responsible for safety, ordering more materials (from teacher) and planning the next project.

### **Unit 5: The Business of Construction**

The students will take an in-depth look at cost analysis in areas of materials, HVAC, short-term versus long-term savings, marketing, liability, deadlines, inspections and Depending on the construction, this will involve installing drainage, plumbing, ductwork and electrical.

### **Unit 6: Decision Making with Green Technologies**

The Management students will investigate the pros and cons of green buildings. A research paper is assigned which will have students do cost comparisons on different facets of green construction and how it affects the cost of initial construction versus up keep and long term payoffs. Students will see as green technology improves, costs decrease.

### **Unit 7: Designing the Archway for the House**

Here students will oversee the construction of the archway for the bedroom and kitchen. Construction students will use parabolas to design and build an archway of their choice. Management students will guide the students in choosing a design that is both appealing and feasible.

### **Unit 8: Surveying**

In this unit, Management students will learn advanced surveying techniques that will prove valuable in the construction profession. They will investigate and master the use of transits, levels, prisms, lasers and clinometers. Management students will do their final research paper on surveying techniques.

## **THIS COURSE WILL PREPARE STUDENTS FOR THE CAHSEE AND/OR CST's:**

Math

## **SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:**

The Construction Technology Core Standards which follow are basic and integral to this construction class.

**Standard 1: Measurement/Math Applications**

**Standard 2: Hand Tools**

**Standard 3: Portable Power Tools**

**Standard 4: Construction Business Processes**

**Standard 5: Construction Project Phases/Systems**

**Standard 6: Safety**

**Standard 7: Industry Trends**

## **Standard 8: Career Preparation and Planning**

### **DISTRICT ESLR'S TO BE ADDRESSED:**

When students complete the Geometry in Construction course, they will be:

- **Self-directed Learners** who will be able to solve problems;
- **Effective Communicators** who can express technology concepts to others effectively;
- **Quality Producers** who can solve technology problems in a neat and organized manner;
- **Constructive Thinkers** who are able to approach complex technology problems in an organized, logical, and systematic fashion;
- **Collaborative Workers** who can work in teams to accomplish a task; and
- **Responsible Citizens** who accept responsibility for their actions.

The Folsom Cordova Unified School District prohibits discrimination, intimidation, harassment (including sexual harassment) or bullying based on a person's actual or perceived ancestry, color, disability, race or ethnicity, religion, gender, gender identity or gender expression, immigration status, national origin, sex, sexual orientation, or association with a person or group with one or more of these actual or perceived characteristics. **For concerns/questions or complaints, contact the Title IX Coordinator(s) and Equity Compliance Officer(s): Curtis Wilson, [cmwilson@fcusd.org](mailto:cmwilson@fcusd.org) (grades K-5) and Jim Huber, ED. D., [jhuber@fcusd.org](mailto:jhuber@fcusd.org) (grades 6-12), 1965 Birkmont Drive, Rancho Cordova, CA 96742, 916-294-9000 ext.104625**