Cocke County High School

2025-2026 - C17H15-111 - Fundamentals of Construction

2025-2026 Syllabus

Part 1: Course Information

Instructor Information

Instructor: Victor Shults
School Telephone: 423-623-8718
E-mail: shultsv@cocke.k12.tn.us
Remind/Class Dojo:

Course Description

. Fundamentals of Construction is a foundational course in the Architecture & Construction cluster covering essential knowledge, skills, and concepts required for careers in construction. Upon completion of this course, proficient students will be able to describe various construction fields and outline the steps necessary to advance in specific construction careers. Students will be able to employ tools safely and interpret construction drawings to complete projects demonstrating proper measurement and application of mathematical concepts. Standards in this course also include an overview of the construction industry and an introduction to building systems and materials. Students will begin compiling artifacts for inclusion in their portfolios, which they will carry with them throughout the full sequence of courses in this program of study. Standards in this course are aligned with Tennessee State Standards for English Language Arts & Literacy in Technical Subjects, Tennessee State Standards in Mathematics, and the National Center for Construction Education and Research (NCCER) Curriculum.*

Prerequisite

None

General Education/High School Pathway Area

This is the foundational course in the Residential & Commercial Construction, Structural Systems, and Mechanical, Electrical, & Plumbing Systems programs of study. For more information on the benefits and requirements of implementing these programs in full, please visit the Architecture & Construction website at http://www.tn.gov/education/cte/ArchitectureConstruction.shtml.

Textbook & Course Materials

Required Text

Modern Carpentry
Essential Skills for the building trades
11th Edition
Willis H. Wagner
Howard Bud Smith

Recommended Texts & Other Readings or Resources

- NCCER Curriculum: National Center for Construction Education and Research o Students who are engaging in activities outlined above will be prepared to pursue certification in the NCCER Core Curriculum module..
- *This course is a hands on style of teaching with lots of shop time..*

Course Requirements

This course satisfies one of three credits required for an elective focus when taken in conjunction with other Architecture & Construction courses.

Course Structure

Online Resources

• P21: Partnership for 21st Century Skills Framework for 21st Century Learning o Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills

Part 2: Student Learning Outcomes

. Standards in this course also include an overview of the construction industry and an introduction to building systems and materials.

You will meet the objectives listed above through a combination of the following activities in this course:

The students will work on projects that teach hand on working skills and the use of book material for training .

Fundamentals of Construction I

fall 2023 Syllabus

Pacing guide.

Course Standards			
Safety		**Week**	**Comments**
1	Identify safety hazards on a jobsite and demonstrate practices for safe working conditions. Accurately read, interpret, and demonstrate adherence to safety rules, including but not limited to rules pertaining to electrical safety, Occupational Safety and Health Administration (OSHA) guidelines, and state and national code requirements. Be able to distinguish between the rules and explain why certain rules apply.	**Week 1**	
2	Define and demonstrate adherence to industry-standard practices regarding general machine safety, tool safety, equipment safety, electrical safety, and fire safety to protect all personnel and equipment. For example, when operating tools and equipment, regularly inspect and carefully employ the appropriate personal protective equipment (PPE), as recommended by Occupational, Safety & Health Administration (OSHA) regulations. Incorporate safety procedures when operating tools and equipment, such as hand and power tools, ladders, scaffolding, and lifting equipment. Complete safety test with 100 percent accuracy.	**Week 1.5**	
3	Follow procedures to work safely around materials. Adhere to responsibilities for employees in material safety as outlined by the Hazard Communication Standard (HazCom), such as locating and interpreting material safety data sheets (MSDS). Demonstrate safe procedures to move materials by planning the movement, properly lifting, stacking, and storing materials, and selecting proper materials-handling equipment.	**Week 2**	
History of Architecture & Construction		**Week**	**Comments**
4	Investigate the evolution of architecture and construction across a variety of civilizations throughout history. Identify major architectural innovations, such as technological advances in materials or construction processes. Create an annotated timeline or visual graphic illustrating significant time periods in the development of construction.	**Week 2.5**	
Introduction to the Construction Industry		**Week**	**Comments**
5	Drawing on resources from textbooks, websites, and research centers such as the National Center for Construction Education and Research (NCCER), analyze the	**Week 3**	

	organization of the modern construction industry. Distinguish among the various personnel involved in the industry and explain the roles of each in the construction process, including but not limited to the owner, developer, architects, engineers, building officials, contractors, suppliers, unions, and professional craftsmen. For example, create a written report or infographic describing the basic steps of traditional building delivery for a construction project (from pre-design to post-construction), outlining who and what is involved in each step.		
6	Research basic regulations affecting today's construction industry. a. Investigate and report on the process for securing a building permit for a selected location in the community. b. Explain what a building code is and where to find published local building codes. Write persuasively to defend why a particular building code is necessary.	**Week 3.5**	
7	Investigate the social, economic, and environmental impact of construction work at the local, national, and global levels. Analyze current and emerging trends in the construction industry such as LEED certification and green building design, critically examining each source consulted for its validity and reasoning. Integrate findings into a written summary; for example, write an informative essay on how the implementation of green construction practices (such as preventing waste and recycling waste) affects the environment and cost of a project.	**4**	
Career Exploration		**Week**	**Comments**
8	Research the major professions and trades within construction, such as electrician, carpenter, mason, plumber, HVAC technician, cost estimator, and construction manager. Produce a chart or other graphic detailing the aptitudes and training needed for at least three careers of interest. For example, outline the typical steps needed to become a journeyman electrician, such as completing postsecondary training and obtaining on-the-job training through an apprenticeship, and devise a tentative career plan to reach employment goals.	**Week 5**	
9	Evaluate jobs data and employment projections in the construction industry from sources such as O*Net OnLine, synthesizing findings from each source. Determine areas of largest growth and discuss the significance of construction to the national and global economy. Articulate why construction is considered a STEM field, citing the specific knowledge, skills, and abilities required to be successful in a variety of construction occupations.		
Introduction to Measurement		**Week**	**Comments**
10	Use physical measurement devices typically employed in construction to complete accurate field measurements. Determine the appropriate units and record accurate measurements of lengths and angles. Tools should include, but are not limited to: fractional rule, metric rule, measuring tape, architect's scale, engineer's scale, dial caliper, micrometer, protractor, and square.	**Week 6**	
11	Interpret given linear and angular dimensions to accurately set up layouts to complete a project. For example, use an architect's scale to measure distance on a construction drawing, and then use a measuring tape to lay out cuts in dimensional lumber to an accuracy of 1/16 inch.	**Week 7**	
Construction Math		**Week**	**Comments**
12	Apply mathematics concepts to solve construction problems, distinguishing which principles apply to a given construction problem. Concepts should include, but are	**Week 8**	

	not limited to: a. Operating with whole numbers, fractions, and decimals. b. Performing conversions between fractions, decimals, and percent. For example, convert a decimal to a fraction to prepare a unit for measurement on a fractional scale to the precision of 1/16 of an inch. c. Working with units such as feet, inches, meters, centimeters, and millimeters, and determining appropriate units for a given construction task. For example, determine how many pieces of 2 ft. 4 in. PVC pipe may be cut from a 10 ft. piece and how much pipe will be left over. d. Calculating the area of two-dimensional spaces. Calculating surface area and volume for three-dimensional objects employing related geometric terminology. e. Performing proportionate reasoning to estimate quantities. f. Using basic rules of right triangles, such as the Pythagorean Theorem, to find missing lengths.		
Tools & Equipment		**Week**	**Comments**
13	Accurately identify a wide range of hand and power tools used in the construction trades, such as striking tools, cutting tools, torque producing tools, leveling and squaring tools, grinding and shaping tools, clamping tools, and pulling and lifting tools. Explain when each is used and describe the characteristics that make each appropriate for a given task.	**Week 9**	
14	Assess a variety of situations requiring the use of hand tools, power tools, and equipment. Select the proper tool and accessories, critique the readiness of the tool, use the tool to accomplish the desired task, and then return the tool and accessories to their proper storage. For example, demonstrate the ability to safely use a crosscut saw to cut a straight square to specified dimensions on dimensional lumber.	**Week 10**	
Introduction to Building Systems and Materials		**Week**	**Comments**
15	Compare and contrast the properties and uses of basic construction materials employed in building construction processes, such as aggregates, asphalt, concrete, steel, wood, and masonry materials.	**Week 11**	
16	Distinguish between the various types of fasteners commonly used in construction, such as nails, screws, and bolts, by creating a visual display outlining the properties and uses of each type. Demonstrate the ability to accurately select and install the appropriate fastener in a variety of situations.	**Week 12**	
17	Using graphic illustrations and supporting text, identify and describe major building systems (i.e. foundation, structural, mechanical, electrical, and plumbing systems) to establish a basic knowledge of their purpose, structure, and function. Discriminate between the different types of construction drawings related to these systems, analyze how those drawings are organized, and interpret the common symbols used in each.	**Week 13**	
Construction Drawings & Specifications		**Week**	**Comments**
18	Inspect and interpret construction drawings, diagrams, and written specifications for construction projects. Explain how pictorial representations relate to a physical	**Week 14**	

	layout. Use an architect's scale and the given dimensions on a construction document to determine an unknown dimension. For example, interpret electrical schedules and single-pole or threeway light switch symbols in electrical plans to determine the types, quantities, and exact physical locations of the light switches to be installed in a construction project.		
19	Describe the purpose of specifications in a construction document set. Examine how specifications are organized according to the Construction Specifications Institute's (CSI) Master Format. Select an assortment of building products and classify them according to Master Format. Analyze actual specifications and create a list of items commonly included in a specification. Following CSI models and format, write a specification for a given component of a building project.	**Week 15**	
20	Create two-dimensional scale drawings using accepted dimensioning rules and measurement systems. For example, as part of a project to build a simple structure, develop the complete drawings that specify the dimensional details for each step of the construction process, annotating all drawings such that another person could replicate the work.	**Week 16**	
Course Project		**Week**	**Comments**
21	Interpret construction drawings to determine the correct materials, tools, and equipment needed to complete a basic construction project. Plan and implement the steps needed to complete the project, attending to precise details and employing safe practices throughout. For example, read and interpret a technical document to build a simple tool box.	**Week 17**	
Portfolio		**Week**	**Comments**
22	Compile important artifacts to create a portfolio connecting personal career preparation to concepts learned in this course. Continually update and reflect upon artifacts produced, including written products, to strengthen work samples over time, using technology where appropriate.	**Week 18**	

Part 4: Grading Policy

Late Work Policy

***Example:** Be sure to pay close attention to deadlines—there will be no make up assignments or quizzes, or late work accepted without a serious and compelling reason and instructor approval.

Viewing Grades in ASPEN (optional)

Points you receive for graded activities will be posted to the ASPEN Grade Book. Click on the My Grades link on the left navigation to view your points.

*Include a statement about the timeframe of when to look for grades. **Example:** Your instructor will update the online grades each time a grading session has been complete—typically X days following the completion of an activity. You will see a visual indication of new grades posted on your ASPEN home page under the link to this course.

Letter Grade Assignment

*Include an explanation between the relationship of points earned and final letter grade. **Example:** Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

This can be modified, but must match the district scale.

Letter Grade	Percentage	Performance
A	93-100%	Excellent Work
A-	90-92%	Nearly Excellent Work
B+	87-89%	Very Good Work
B	83-86%	Good Work
B-	80-82%	Mostly Good Work
C+	77-79%	Above Average Work
C	73-76%	Average Work
C-	70-72%	Mostly Average Work
D+	67-69%	Below Average Work
D	60-66%	Poor Work
F	0-59%	Failing Work

Important note: For more information about grading at Channel Islands, visit the academic policies and grading section of the university catalog.

Part 5: Course Policies

Attend Class

Students are expected to attend all class sessions as listed on the course calendar.

Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that they can help you find a solution.

Complete Assignments

Assignments must be submitted by the given deadline or special permission must be requested from instructor *before the due date*. Extensions will not be given beyond the next assignment except under extreme circumstances.

All discussion assignments must be completed by the assignment due date and time. Late or missing discussion assignments will effect the student's grade.

Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned if [*insert condition here]. All incomplete course assignments must be completed within [*insert timeframe here].

Academic Dishonesty Policy

This is an example:

1. Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show possession of a level of knowledge or skill that he/she does not possess.

2. Course instructors have the initial responsibility for detecting and dealing with academic dishonesty. Instructors who believe that an act of academic dishonesty has occurred are obligated to discuss the matter with the student(s) involved. Instructors should possess reasonable evidence of academic dishonesty. However, if circumstances prevent consultation with student(s), instructors may take whatever action (subject to student appeal) they deem appropriate.

3. Instructors who are convinced by the evidence that a student is guilty of academic dishonesty shall assign an appropriate academic penalty. If the instructors believe that the academic dishonesty reflects on the student's academic performance or the academic integrity in a course, the student's grade should be adversely affected. Suggested guidelines for appropriate actions are: an oral reprimand in cases where there is reasonable doubt that the student knew his/her action constituted academic dishonesty; a failing grade on the particular paper, project or examination where the act of dishonesty was unpremeditated, or where there were significant mitigating circumstances; a failing grade in the course where the dishonesty was premeditated or planned. The instructors will file incident reports with the Vice Presidents for Academic Affairs and for Student Affairs or their designees. These reports shall include a description of the alleged incident of academic dishonesty, any relevant documentation, and any recommendations for action that he/she deems appropriate.

Student Testing Code of Ethics and Security

It is important for you as a student to know that the following guidelines are to be strictly followed. This year the TNReady EOC test will count at least 15% of your final semester grade. Your work on this test is very important and it deserves your best effort.
I understand that during testing on the days of the assessment, I am responsible for:

- Not having any electronic devices on me or in my purse/backpack/pockets
    - Including but not limited to cell phones, smart phones, smart watches, etc. **during testing or during breaks.**
    - Best practice is for students to leave devices at home or in their lockers on the day of testing.
    - If I am caught with a device during testing or during breaks, my test may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.
- Trying my best on the test
    - If I do not attempt to test (I give **no answers or randomly answer** questions) my test score may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.
    - The testing administrators and proctors in the testing environment will determine if no answers or random answering is taking place.
    - I will focus and put forth effort on the test .
- Being honest and not cheating
    - If I am caught cheating (taking pictures of the test, writing down and passing answers, talking to other students, looking on other computers, using software outside the testing platform), my test may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level

disciplinary action as deemed appropriate by the administration.

Important Note: Any form of academic dishonesty, including cheating and plagiarism, may be reported to the office of student affairs.

Course policies are subject to change. It is the student's responsibility to check for corrections or updates to the syllabus. Any changes will be posted in the classroom.