Cocke County High School

Residential & Commercial Construction 2025-2026Syllabus

Part 1: Course Information

Instructor Information

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Course Description

Residential & Commercial Construction I is the second course in the Residential & Commercial Construction program of study intended to prepare students for careers in construction by Page 2 developing an understanding of the different phases of a construction project from start to finish. Upon completion of this course, proficient students will be able to demonstrate knowledge and skill in the earlier phases of building construction, including site layout, foundation systems, concrete, framing systems, and electrical systems. Students will be able to perform concrete work; frame walls, ceilings, and floors of a structure; and install proper wiring while safely employing tools and interpreting construction drawings to complete projects. Emphasis is placed on demonstrating proper measurement and application of mathematical concepts. Standards in this course also include principles of the construction industry and business and project management. Students will continue compiling artifacts for inclusion in their portfolios, which they will carry with them throughout the full sequence of courses in this program of study

Prerequisite

Fundamentals of Construction (6073)

General Education/High School Pathway Area

- This is the second course in the Residential & Commercial Construction program of study. For more information on the benefits and requirements of implementing this program in full, please visit the Architecture & Construction website at https://www.tn.gov/education/career-and-technicaleducation/career-clusters/cte-cluster-architecture-construction.html..

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

*References to other standards include: • NCCER Curriculum: National Center for Construction Education and Research o Note: NCCER accreditation is required to offer NCCER credentials to students. Instructors trained through the NCCER Instructor Certification Training Program (ICTP) may use the NCCER curricula to teach the listed standards. By doing so, their students will complete modules working toward a certificate of completion for NCCER Construction Technology and be placed in NCCER's National Registry Database. • 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.

Course Structure

This is a course that will use the hands on teaching styles and book material to help guide the student in the construction industry .

Part 2: Student Learning Outcomes

This career cluster prepares learners for careers in designing, planning, managing, building and maintaining the building environment. People employed in this cluster work on new structures, restorations, additions, alterations and repairs.

Architecture and construction comprise one of the largest industries in the United States. Based on the latest statistics, this career cluster has 13.8 million jobs. In the next few years, many new jobs will be added and many employment opportunities will result from the need to replace experienced workers who leave jobs

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Part 3: Topic Outline/Schedule

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. Perform a hazard assessment for a given task such as changing the light bulbs in a classroom. Explain the steps necessary to safely perform the task, outlining procedures to follow in the case of an emergency.	**Week 1**	
2	Maintain safety records 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	**Week 2**	

	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.		
Tools & Equipment		**Week**	**Comments**
4	For each of the systems covered in this course, identify and select the proper tools and accessories, critique the readiness of the tools, use the tools to accomplish the desired tasks, and then return the tools and accessories to their proper storage locations. For example, demonstrate the ability to safely use a darby or bullfloat to level a concrete surface and effectively clean and store the tool.	**Week 2.5**	
Career Exploration		**Week**	**Comments**
5	Referencing data from U.S. Department of Labor and other sources, explain an apprenticeship. Write persuasively to describe the benefits of the apprenticeship approach of on-the-job training paired with related training for individuals seeking construction careers. Use a variety of sources to gather data, cite each source, and briefly describe why the chosen source is reliable.	**Week 3**	
6	Research apprenticeships and postsecondary institutions (colleges of applied technology, community colleges, and four-year universities) in Tennessee and other states that offer construction-related programs. Write an informative paper or develop an infographic identifying entry requirements for a specific apprenticeship or postsecondary program of study, and the secondary courses that will prepare students to be successful in the program.	**Week 3.5**	
Construction Industry Principles		**Week**	**Comments**
7	Investigate and report on the process for determining the zoning regulations for a particular building site. Describe how zone designation and regulations such as setbacks, ground coverage, and maximum height impact the design and placement of a building on a given site, citing findings from the investigation.	**Week 4**	
8	Explain inspection procedures used to enforce building codes during the construction of a residential or commercial building, outlining the roles and responsibilities of the building inspector and the contractor and the intervals at which inspections are performed.	**Week 5**	
Site Layout		**Week**	**Comments**
9	Describe the basic procedures by which surveyors create site drawings. Read and interpret a site drawing to determine the steps, personnel, equipment, and materials needed to prepare a site for construction. Relate the site features labeled on the plan to the layout and topography on the actual site. Develop a timeline and action steps needed to complete a site layout.	**Week 5.5**	
10	Apply the appropriate mathematical principles, tools, equipment, and procedures to accurately lay out a site, including:	**Week 6**	

	a. Estimating distances by employing pacing techniques. b. Completing precise measurements with manual or electronic equipment, using mathematical concepts as necessary, such as converting decimal feet to feet and inches or applying right triangle rules such as the 3-4-5 rule. For example, in the process of staking the corners of a building using taping procedures, calculate the diagonal of the building by plugging the length and width of the building into the Pythagorean Theorem. Then, use the diagonal value to locate the third corner and check the completed layout for accuracy. c. Describing the tools, equipment, and procedures involved in establishing elevations on a site. For example, use a builder's level to determine site and building elevations. d. Annotating site layout data using proper field note techniques.		
Foundation Systems and Properties of Concrete		**Week**	**Comments**
11	Draw on construction texts and other technical documents to compare and contrast types of foundation systems and footings. Create a written report or visual description outlining the structure and properties of each type. Describe the conditions, costs, and other factors that influence the decision to use each type of system.	**Week 6.5**	
12	Describe the composition of concrete by listing the materials used to make concrete. Analyze the factors that impact the compression strength of concrete, such as the watercement ratio. Identify additional materials used in concrete construction, such as reinforcement materials and forms. For example, create a comparison chart outlining the materials, forms, and reinforcement used in concrete for a sidewalk versus a bridge.	**Week 7**	
13	Calculate the total volume of concrete and the specific materials necessary for a given project based on construction drawings and specifications. Use the information to estimate the amount of each material needed to mix concrete for the project.	**Week 8**	
14	Analyze factors influencing the curing of concrete, such as the weather, moisture, and the use of control joints. For example, write an explanatory text outlining the procedures necessary to ensure concrete cures properly for a given date and location, including procedures to prevent cracking and recommendations for the spacing of control joints.	**Week 9**	
15	Apply the appropriate tools, equipment, and procedures to safely place concrete and cleanup after a concrete project. Work in teams to safely and properly employ tools and personal protective equipment (PPE), and follow procedures to construct a simple concrete form, place concrete into the form, and strike-off (screed), level, smooth, edge, and joint concrete to finish the project.	**Week 9.5**	
Framing Systems Overview		**Week**	**Comments**
16	Distinguish among the basic types of wood framing systems, such as platform frames, balloon frames, and post-and-beam frames. Create a chart to define and compare the pros and cons of each, citing examples of when each is used.	**Week 10**	
Floor Framing Systems		**Week**	**Comments**
17	Identify the components which make up a floor frame, analyzing the purpose of and interrelationships among each component and explaining the sequence in which each is constructed.	**Week 10.5**	
18	Read and interpret construction drawings to determine floor system requirements such as the proper girder and joist size for a given span and floor	**Week 11**	

	load, and estimate the amount of material needed to frame a floor assembly.		
19	Describe the procedures necessary to fasten sills to the foundation and construct a floor assembly. Apply the appropriate tools, equipment, and procedures to build a floor assembly. Work in teams to install girders, lay out and install floor joists, install bridging and blocking, and apply subflooring.	**Week 11.5**	
Wall and Ceiling Framing Systems		**Week**	**Comments**
20	Explain the procedure to lay out a wood frame wall, defining and describing the components such as plates, studs, partitions, door and window openings, bracing, and other components.	**Week 12**	
21	Read and interpret drawings to determine wall and ceiling frame requirements for a given residential or commercial structure. For example, calculate the length of a stud and estimate the amount of material needed to frame a wall and ceiling assembly.	**Week 12.5**	
22	Work in teams to construct a wall frame and ceiling assembly by implementing required safety techniques, tools, and equipment. Accurately measure and lay out the frame; accurately level and plumb the walls.	**Week 13**	
23	Compare and contrast the different tools, procedures, and fastening methods used in steel wall framing versus wood wall framing in building construction. Outline the major similarities and differences in each and write persuasively to provide a recommendation to a client for a specific project.	Week 13.5	
Electrical Systems		**Week**	**Comments**
24	Describe how different levels of electrical shock affect the human body. Research current OSHA standards and other regulations specific to electrical systems to identify methods and equipment to reduce the risk of injury due to electrical shock. Drawing on evidence from textbooks and OSHA standards, apply lockout/tagout procedures to ensure safe working conditions. For example, perform a lockout/tagout to prepare to work on an electrical device.	**Week 14**	
25	Citing technical data, explain the interrelationships among sources of current, voltage, resistance, and power in electric circuits and the units to quantify each (amperes, volts, ohms and watts). Demonstrate understanding of the operation of electrical circuits (series, parallel, and series-parallel circuits) and relate it to the physical laws, such as Ohm's law and Kirchhoff's law, that govern the behavior of electrical circuits and devices such as the function of resistors in electrical circuits. Accurately apply these physical laws to solve problems. For example, use Ohm's law to calculate the current flow of a circuit for an electric dryer with a given voltage and resistance.	**Week 14.5**	
Construction Drawings & Specifications		**Week**	**Comments**
26	Inspect and interpret a full set of construction drawings and specifications for a construction project including civil, architectural, structural, mechanical, plumbing, electrical, and fire protection drawings and specifications. Read and interpret different drawing types including plan view drawings, elevation view drawings, section drawings, detail drawings, and schedules. Explain the relationship between different types of drawing and the importance of cross-referencing different types of drawings with one another and cross-referencing drawings with specifications. For example, explain how a floor plan, elevation, and detail drawing may all be used to inform the reader about the layout and material of a given building component, such as a cabinet layout or an exterior wall.	**Week 15**	

Business and Project Management		**Week**	**Comments**
27	Describe strategies used to promote collaboration, trust, and clear communication among internal and external parties on a job site. Practice effective verbal, nonverbal, written, and electronic communication skills for working with colleagues, employers, clients, and other personnel while demonstrating the ability to: listen attentively, speak courteously and respectfully, resolve obstacles in construction, and respond to criticism. For example, assume the roles of a construction business owner and a potential client, listen to the needs of the potential client, and respond to the potential client by email; explain the services provided by the company and the next steps needed to begin the project. Other role playing could include a construction business owner and a potential subcontractor.	**Week 15.5**	
28	Describe the components and purpose of a basic contract document for a residential project. Recognize the relationship and responsibilities of various parties to a contract. Write a basic contract for a construction job, such as a carpenter's contract to complete a deck addition for a residential client.	**Week 16**	
29	Interpret construction drawings to determine the correct materials, tools, and equipment needed to complete a construction project. Plan and implement the steps needed to complete the project, adhering to inspection procedures and employing safe practices throughout. Draw from print and electronic examples to create and publish a material list, cost estimation, construction schedule, and inspection checklist for a project, applying the components of the documents to the given project.	Week 16.5	
30	Log daily activities completed during a construction project over an extended period of time. Document important facts concisely in a daily report as would a project manager on a jobsite, including daily progress, equipment and materials used, personnel involved, and other work-related activities. Review and revise as appropriate.	Week 17	
Portfolio		**Week**	**Comments**
31	Update materials from coursework to add to the portfolio started in Fundamentals of Construction. Continually reflect on coursework experiences and revise and refine the career plan generated in the prior course, using technology where appropriate. Include photographs or illustrations and written descriptions of sequential progress in construction projects.	**Week 18**	

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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.

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Part 5: Course Policies

Attend Class

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

Participate

*If you monitor, track, and/or score student participation, explain how you will keep track and how often students should be accessing the course. If appropriate, mention that you will be using ASPEN tracking tool, discussions, chat sessions, and group work, to monitor their participation in the course.

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.