



## Scope and Sequence Curriculum Outline

**Career Program:** Construction Technology II

**DOE Code:** 5578

**Career Cluster:** Architecture and Construction

**Recommended Grade Levels:** 12

**Prerequisites:** Construction Technology I

**High School Credits:** 3 per semester (6 total per school year)

**Additional Information:** Counts as a Directed Elective or Elective for the General, Core 40, Academic Honors and Technical Honors diplomas

**Program Description:** Construction Technology II builds on the formation, installation, maintenance, and repair skills learned in Construction Technology I. Information on materials, occupations, and professional organizations within the industry are covered. Students will develop basic knowledge, skills, and awareness of interior trim and the installation of drywall, moldings, interior doors, cabinets, and baseboard moldings. Students will also develop exterior finishing skills. The program includes instruction on the installation of cornices, windows, doors, and various types of sidings currently used in industry. Studies will also focus on the design and construction of roof systems and the use of framing squares for traditional rafter and truss roofing. Construction Technology II students develop leadership skills and work as team leaders. Upon completion of this program, students continue their education in 2 and 4-year degree programs at the postsecondary level or enter employment in one of the many construction fields. Students also enter apprenticeship programs for specific construction trades.

**Alignment:** Indiana Department of Education Academic Standards Course Framework, National Center for Construction Education and Research (NCCER) Core Curriculum, NCCER Carpentry II Curriculum, Ivy Tech Community College (dual credit agreement), and NCCER textbook materials.

**Companion Documents:** WCC Construction Technology II Program Syllabus; WCC High School Pathway Plan; WCC Program Description Guide

### Curriculum Content Summary:

- Interior Finishes
- Exterior Finish Systems
- Roof Framing Construction
- Basic Employability / Orientation to the Construction Trade

Content	Indiana DOE Standards	Knowledge & Skills <i>(Based on NCCER)</i>	Example Activities	Time Frame	Evaluation / Certification
<p><b>DOMAIN</b> Interior Finishes</p> <p><b>Core Standard I</b> Students select the appropriate materials, processes, and technologies to accurately estimate interior trim and finish projects</p>	<p><b>CTII-1.1</b> Distinguish between common drywall, moisture resistant wallboard, and cement backer board</p> <p><b>CTII-1.2</b> Estimate material costs for construction projects</p> <p><b>CTII-1.3</b> Select proper tools and materials for interior finish systems</p> <p><b>CTII-1.4</b> Select appropriate door types and styles, installation procedures, and finishing techniques</p> <p><b>CTII-1.5</b> Apply appropriate cabinet selection and installation techniques</p> <p><b>CTII-1.6</b> Demonstrate installation procedures and materials for wood and non-wood products</p> <p><b>CTII-1.7</b> Interpret health, safety, and welfare standards as dictated by local, state, or federal agencies, in relation to shop/work site safety</p>	<p><b>NCCER Carpentry Level 2 – Module 7</b></p> <ul style="list-style-type: none"> <li>• Identify components of a drywall assembly</li> <li>• Describe the installation of drywall</li> <li>• Contrast rates assemblies to nonrated assemblies</li> <li>• Identify how to calculate a quantity takeoff for proper drywall installation</li> <li>• Select the type and thickness of drywall required for an installation</li> <li>• Install gypsum drywall panels on a stud wall and a ceiling using various fastening systems</li> <li>• Estimate material quantities for an installation</li> </ul> <p><b>NCCER Carpentry Level 2 – Module 8</b></p> <ul style="list-style-type: none"> <li>• Identify differences between the six levels of finish established by industry standards</li> <li>• Identify the different materials for proper drywall finishing</li> <li>• Identify the proper tools used in drywall finishing</li> <li>• Describe proper drywall finishing procedures</li> <li>• Explain how to estimate the proper amount of drywall finishing materials</li> <li>• State the differences between the six levels of finish established by industry standards and distinguish a finish level by observation</li> <li>• Properly apply a corner bead, tape, and finish to a drywall panel</li> <li>• Patch damaged drywall</li> </ul> <p><b>NCCER Carpentry Level 2 – Module 6</b></p> <ul style="list-style-type: none"> <li>• Describe the safety hazards related to working with doors</li> <li>• Identify the different types and composition of residential and commercial doors</li> <li>• Identify the various types of door jambs and frames</li> <li>• Identify the different types of door hardware</li> <li>• Describe the various installation techniques for doors and hardware</li> <li>• List and identify specific items included on a typical door schedule</li> <li>• Demonstrate the proper installation of a hollow metal frame and door using the proper safety precautions</li> <li>• Install a prehung door unit or door hanging system using the proper safety precautions</li> <li>• Lay out and cut hinges in a project</li> <li>• Install a door closer using the proper safety precautions</li> </ul>	<ul style="list-style-type: none"> <li>• Site projects requiring drywall installation and finishing</li> <li>• Participate in quantity take off and estimating for projects</li> <li>• Drywall projects in lab</li> <li>• Site projects requiring millwork and cabinetry installation</li> <li>• OSHA 10 class</li> <li>• Install suspended ceiling systems on class projects</li> <li>• Participate in estimating ceiling systems for class projects</li> <li>• Install trim on class projects</li> <li>• Install doors and windows on class projects or shop projects</li> </ul>	<p>18 weeks</p> <p>Reinforced throughout the year</p>	<ul style="list-style-type: none"> <li>• NCCER Carpentry Level 2 Modules 7, 8, 6, 10, 11, 9 Written and Performance Assessments</li> <li>• NCCER Carpentry Level 1 Module 8 Written and Performance Assessments</li> <li>• Project/lab participation</li> <li>• Dual credit</li> <li>• Classroom work</li> </ul>

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<p><b>DOMAIN</b> Interior Finishes</p> <p><b>Core Standard I</b> Students select the appropriate materials, processes, and technologies to accurately estimate interior trim and finish projects</p> <p style="text-align: center;"><i>-Continued-</i></p>		<p><b>NCCER Carpentry Level 2 – Module 10</b></p> <ul style="list-style-type: none"> <li>• Describe the safety hazards related to working with window, door, floor, and ceiling trim</li> <li>• Identify the different types of standard molding and materials</li> <li>• Explain how to install different types of molding</li> <li>• Explain how to estimate window, door, floor, and ceiling trim</li> <li>• Make square and miter cuts to selected moldings using a hand miter box and a power miter/compound miter saw</li> <li>• Make a coped joint using a coping saw</li> <li>• Install interior trim using a finish nailer and hand nailing methods</li> <li>• Estimate the quantities of different trim materials required for the job</li> </ul> <p><b>NCCER Carpentry Level 2 – Module 11</b></p> <ul style="list-style-type: none"> <li>• Describe the safety hazards when installing cabinets</li> <li>• Identify the different types of cabinets</li> <li>• Identify cabinet components and hardware and describe various types of hardware used on cabinets</li> <li>• Explain how to lay out and install a basic set of cabinets</li> <li>• Lay out and identify various types of base and wall units following a specified layout scheme</li> </ul> <p><b>NCCER Carpentry Level 1 – Module 8</b></p> <ul style="list-style-type: none"> <li>• Identify the components of the building envelope</li> <li>• State the requirements for a proper window installation</li> <li>• State the requirements for a proper door installation</li> <li>• Identify the various types of locksets used on exterior doors and explain how they are installed</li> <li>• Prepare a rough opening for a proper window installation</li> <li>• Prepare a rough opening for a proper door installation</li> <li>• Install a lockset</li> </ul> <p><b>NCCER Carpentry Level 2 – Module 9</b></p> <ul style="list-style-type: none"> <li>• Identify components necessary to properly install suspended ceiling system</li> <li>• Interpret a reflected ceiling plan</li> <li>• Identify the procedures to lay out and install a suspended ceiling system</li> </ul>			

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<p><b>DOMAIN</b> Interior Finishes</p> <p><b>Core Standard I</b> Students select the appropriate materials, processes, and technologies to accurately estimate interior trim and finish projects</p> <p><i>-Continued-</i></p>		<ul style="list-style-type: none"> <li>• Estimate the quantities of materials needed to install a lay-in suspended ceiling system</li> <li>• Establish a level line at ceiling level such as is required when installing the wall angle for a suspended ceiling</li> <li>• Lay out and install a lay-in suspended ceiling system</li> </ul>			

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<p><b>DOMAIN</b> Exterior Finish Systems</p> <p><b>Core Standard 2</b> Students select the appropriate tools, procedures, and material estimation techniques to perform exterior finish projects to code and specification</p>	<p><b>CTII-2.1</b> Demonstrate knowledge of building structure, materials, detail structural members, and methods of construction</p> <p><b>CTII-2.2</b> Adapt concepts and procedures for installing different types of trim used in exterior finish systems</p> <p><b>CTII-2.3</b> Apply concepts for the installation of exterior doors, windows, and siding</p> <p><b>CTII-2.4</b> Demonstrate processes for roofing, venting, and flashing materials, and installations</p> <p><b>CTII-2.5</b> Apply and adapt system concepts and knowledge to residential home construction Technologies</p> <p><b>CTII-2.6</b> Interpret health, safety, and welfare standards as dictated by local, state, or federal agencies, in relation to shop/work site safety</p>	<p><b>NCCER Carpentry Level 2 – Module 3</b></p> <ul style="list-style-type: none"> <li>• Describe safety hazards when working with exterior finish materials</li> <li>• Describe the various types and applications of exterior finish materials</li> <li>• Explain how to install exterior finish materials</li> <li>• Describe the estimating procedure for exterior finish products</li> <li>• Install three of the most common siding types</li> <li>• Estimate the amount of lap or panel siding required for a structure</li> </ul> <p><b>NCCER Carpentry Level 2 – Module 4</b></p> <ul style="list-style-type: none"> <li>• Describe the safety and health hazards when working with insulation</li> <li>• Describe the various types of insulation and their characteristics</li> <li>• Describe the various installation methods for insulation</li> <li>• Identify the requirements for moisture control, waterproofing, and ventilation, and describe the related installation methods</li> <li>• Describe the estimating procedure for thermal and moisture projects</li> <li>• Install blanket insulation in a wall</li> <li>• Install a vapor barrier on a wall</li> <li>• Install selected building wraps</li> </ul>	<ul style="list-style-type: none"> <li>• Install exterior finishes on class projects including windows, doors, trim, siding, roofing and flashing</li> </ul>	<p>7 weeks</p> <p>Reinforced throughout the year</p>	<ul style="list-style-type: none"> <li>• NCCER Carpentry Level 2 Modules 3 and 4 Written and Performance Assessments</li> <li>• Project/lab participation</li> <li>• Dual credit</li> <li>• Classroom work</li> </ul>

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<p><b>DOMAIN</b> Roof Framing Construction</p> <p><b>Core Standard 3</b> Students apply concepts of roofing layout, slopes, pitches, and materials estimation to construct residential facilities</p>	<p><b>CTII-3.1</b> Demonstrate the proper use of framing squares, quick squares, and rafter tables</p> <p><b>CTII-3.2</b> Employ correct procedures for installation of roof sheathing systems</p> <p><b>CTII-3.3</b> Explore the concepts of engineered roofing</p>	<p><b>NCCER Carpentry Level 1 – Module 7</b></p> <ul style="list-style-type: none"> <li>• Identify the components of ceiling framing</li> <li>• Identify common types of roofs used in residential construction</li> <li>• Identify the components and define the terms associated with roof framing</li> <li>• Describe the methods used to lay out a common rafter</li> <li>• Describe how to erect a gable roof</li> <li>• Describe how to frame a basic gable end wall</li> <li>• Recognize the use of trusses in basic roof framing</li> <li>• Describe the basics of roof sheathing installation</li> <li>• Describe how to perform a material takeoff for a roof</li> <li>• Lay out ceiling joists</li> <li>• Cut and install ceiling joists for a wood frame building</li> <li>• Estimate the number of ceiling joists required for a building</li> <li>• Lay out common roof rafters</li> <li>• Cut and install roof rafters for a gable roof</li> <li>• Frame a gable end wall</li> <li>• Erect a gable roof using trusses</li> <li>• Sheath a gable roof with an opening</li> <li>• Perform a material takeoff for a roof</li> </ul> <p><b>NCCER Carpentry Level 2 – Module 5</b></p> <ul style="list-style-type: none"> <li>• Explain the safety requirements for roofing projects</li> <li>• Identify the tools and fasteners used in roofing</li> <li>• Identify the different roofing systems and their associated materials</li> <li>• Describe the installation techniques for common roofing systems</li> <li>• Describe the estimating procedure for roofing projects</li> <li>• Demonstrate how to install composition shingles on a specified roof and valley</li> <li>• Demonstrate the method to properly cut and install the ridge cap using composition shingles</li> <li>• Lay out, cut, and install a cricket or saddle</li> <li>• Demonstrate the techniques for installing other selected types of roofing materials</li> </ul>	<ul style="list-style-type: none"> <li>• Layout roofing system on class project or lab project</li> <li>• Install roofing systems on class project or lab project</li> </ul>	<p>11 weeks</p> <p>Reinforced throughout the year</p>	<ul style="list-style-type: none"> <li>• NCCER Carpentry Level 1 Module 7 Written and Performance Assessments</li> <li>• NCCER Carpentry Level 2 Module 5 Written and Performance Assessments</li> <li>• Project/lab participation</li> <li>• Dual credit</li> <li>• Classroom work</li> </ul>

**Additional content from Construction Technology I reinforced in Construction Technology II**

Content	Indiana DOE Standards	Knowledge & Skills <i>(Based on NCCER)</i>	Example Activities	Time Frame	Evaluation / Certification
<p><b>DOMAIN</b> Basic Employability / Orientation to the Construction Trade</p> <p>Students apply employability skills and understand the construction trade in order to gain employment</p>	<p>No corresponding standards</p>	<p><b>NCCER Core – Module 8</b></p> <ul style="list-style-type: none"> <li>Describe the opportunities in the construction business and how to enter the construction workforce</li> <li>Explain the importance of critical thinking and how to solve problems</li> <li>Explain the importance of social skills and identify ways good social skills are applied in the construction trade</li> </ul> <p><b>NCCER Carpentry Level 1 – Module 1</b></p> <ul style="list-style-type: none"> <li>Identify the career and entrepreneurial opportunities within the carpentry trade</li> <li>Identify the skills, responsibilities, and characteristics need to be a successful carpenter</li> <li>Summarize how to be connected to the industry through an organization like SkillsUSA</li> <li>Explain the importance of safety in the construction industry, and describe the obligations of the contractor, subcontractors, and individual to ensure a safe work environment</li> </ul>	<ul style="list-style-type: none"> <li>Guest speakers from the military, union, and potential employers</li> <li>Provide opportunities for some students through work based learning</li> <li>SkillsUSA membership</li> <li>Skills competitions</li> <li>NTHS</li> <li>Student ambassadors</li> <li>Field trips</li> </ul>	<p>Reinforced throughout the year</p>	<ul style="list-style-type: none"> <li>Project/lab participation</li> <li>Essential Skills Evaluation</li> <li>Technical Skills Evaluation</li> <li>Work Ethic Certification</li> </ul>