Maryland CTE Programs of Study

Carpentry II (2025)

GENERAL REQUIREMENTS. This course is recommended for students in Grades 11-12. 1

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INTRODUCTION 2

A Career and Technical Education (CTE) instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. 2.A

B The Construction Career Cluster prepares students for careers in designing, planning, and building sustainable infrastructure. This field includes architects, engineers, construction managers, and skilled trades professionals. 2.B

C The Carpentry program prepares students for careers in residential, commercial, and industrial Carpentry systems. Through a comprehensive curriculum aligned with industry standards, students develop foundational construction skills and specialized Carpentry knowledge while earning industry-recognized certifications. The program emphasizes hands-on learning, safety protocols, and real-world applications, preparing graduates for immediate entry into the Carpentry or related trades. 2.C

D This advanced course builds on the skills learned in Carpentry I, focusing on specialized carpentry techniques and complex construction projects. Students will gain expertise in stair layout, roof framing, and installation of exterior finishes such as windows, doors, and siding. The curriculum also emphasizes advanced blueprint reading, material estimation, and job-site management. Hands-on projects include constructing complex frameworks and applying finishing techniques to interior and exterior elements. Upon completion, students will possess the technical skills and knowledge necessary to contribute to professional construction teams or begin content exploration of the NCCER Carpentry Level 2 certificate (or similar approved IRC). 2.D

E Students will participate in at least two Career-Connected Education and Work-Based Learning experiences in this course, which might include informational interviews or job shadowing relevant to the program of study. 2.E

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tudents are encouraged to participate in extended learning experiences through ligned Career and Technical Student Organizations (CTSOs). CTSOs are a

cocurricular requirement in the Carl D. Perkins Act, and alignment to CTSO activities is an expectation for CTE programs in the state of Maryland. 2.F

KNOWLEDGE AND SKILLS 3

A The student demonstrates the necessary skills for career development, maintenance of employability, and successful completion of course outcomes. The student is expected to: 3.A

1. Identify and demonstrate positive work behaviors that enhance employability and job advancement, such as regular attendance, promptness, proper attire, maintenance of a clean and safe work environment, and pride in work. 3.A.1
2. Demonstrate positive personal qualities such as flexibility, open-mindedness, initiative, active listening, and a willingness to learn. 3.A.2
3. Employ effective reading, writing, and technical documentation skills. 3.A.3
4. Solve problems using critical thinking techniques and structured troubleshooting methodologies. 3.A.4
5. Demonstrate leadership skills and collaborate effectively as a team member. 3.A.5
6. Implement safety procedures, including proper handling of hardware and following OSHA guidelines. 3.A.6
7. Exhibit an understanding of legal and ethical responsibilities in the construction field, following applicable laws and best practices for safety. 3.A.7
8. Demonstrate time-management skills and the ability to prioritize tasks in a technical setting. 3.A.8

B The student identifies various career pathways in the Carpentry field. The student is expected to: 3.B

1. Develop a career plan that includes the necessary education, certifications, job skills, and experience for specific roles in the Carpentry field. 3.B.1
2. Create a professional resume and portfolio that reflect skills, projects, certifications, and recommendations. 3.B.2
3. Demonstrate effective interview skills for roles in the Carpentry field. 3.B.3

C The student identifies the issues associated with Carpentry hazards found on a jobsite. The student is expected to: 3.C

1. Demonstrate safe working procedures in a construction environment. 3.C.1
2. Explain the purpose of the Occupational Safety and Health Administration (OSHA) and how it promotes safety on the job. 3.C.2
3. Identify Carpentry hazards and how to avoid or minimize them in the workplace. 3.C.3
4. Explain safety issues concerning lockout and tagout procedures, personal protection using assured grounding and isolation programs, confined space entry, respiratory protection, and fall protection. 3.C.4

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The student integrates core academic skills into Carpentry construction practices. The student is expected to: 3.D

1 Demonstrate the use of clear communication techniques, both written and verbal, that are consistent with industry standards. 3.D.1

2 Apply mathematical concepts including the application of the Pythagorean theorem for verifying square corners in construction, ratio and proportion calculations for stair design (such as rise-to-run ratios), area and volume calculations for material estimation (like board feet and concrete volumes), and angular measurements for roof layout. Students must master both precise measurement techniques and estimation skills to meet industry standards for construction accuracy and material efficiency. 3.D.2

3 Use scientific principles include understanding material properties (such as wood grades, treatment processes, and engineered products), physical forces (like load distribution in floor systems and wind loads on structures), and building science principles (including moisture movement, thermal transfer, and air infiltration in building envelopes). Students learn how these scientific principles inform construction decisions, from selecting appropriate materials to implementing proper installation techniques that ensure building durability and efficiency. 3.D.3

E The students analyze steel framing systems and their applications in construction. The student is expected to: 3.E

1 Differentiate between tools and components of cold-formed steel framing systems and demonstrate their safe use. 3.E.1

2 Sequence the steps required to lay out and install a steel stud wall. 3.E.2

3 Examine various steel framing applications in construction projects. 3.E.3

F The students evaluate thermal and moisture protection systems in building construction. The student is expected to: 3.F

1 Explain the purpose and applications of building insulation. 3.F.1

2 Compare and contrast different insulation materials and types. 3.F.2

3 Demonstrate proper installation techniques for various insulation systems. 3.F.3

4 Analyze moisture control methods in building construction. 3.F.4

5 Evaluate water and air infiltration control methods in building systems. 3.F.5

G The students apply drywall installation techniques and methods. The student is expected to: 3.G

1 Select and analyze materials and tools required for drywall installation. 3.G.1

2 Demonstrate procedures for installing gypsum board on various ceiling and wall configurations. 3.G.2

H The students evaluate interior finish, trim, and cabinet installation processes. The student is expected to: 3.H

1 Design job preparation and safety plans for finish carpentry projects. 3.H.1

2 Differentiate between types of standard moldings and materials. 3.H.2

3 Demonstrate installation techniques for various molding and trim types. 3.H.3

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4 Classify common types of cabinets and countertops. 3.H.4

5 Analyze common cabinet components and hardware. 3.H.5

6 Demonstrate the layout and installation process for basic cabinet sets. 3.H.6

I The students analyze door systems and hardware installation techniques. The student is expected to: 3.I

1 Assess safety hazards related to door installation. 3.I.1

2 Compare common door frames and their installation methods. 3.I.2

3 Evaluate residential door types, hardware, and installation techniques. 3.I.3

4 Analyze commercial door systems, hardware, and installation methods. 3.I.4

J The students evaluate suspended and acoustical ceiling systems. The student is expected to: 3.J

1 Select components necessary for suspended ceiling system installation. 3.J.1

2 Analyze reflected ceiling plans for installation requirements. 3.J.2

3 Evaluate key considerations, methods, and best practices in ceiling installation. 3.J.3

K The students analyze exterior finish and trim installation processes. The student is expected to: 3.K

1 Assess common hazards and develop site safety plans for exterior trim and finish installation. 3.K.1

2 Sequence the steps for exterior siding preparation. 3.K.2

3 Evaluate common types of exterior siding materials and their installation processes. 3.K.3

L The students analyze mass timber construction methods and applications. The student is expected to: 3.L

1 Evaluate the applications of mass timber in the construction industry. 3.L.1

2 Analyze building techniques and tools specific to mass timber construction. 3.L.2

3 Sequence common construction phases in the mass timber building process. 3.L.3