CTECS Carpentry Curriculum

CTECS
CONNECTICUT
TECHNICAL EDUCATION
AND CAREER SYSTEM

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CTECS - Vision of Graduate

Connecticut Technical Education and Career System
Vision of a Graduate

A CTECS Graduate is…

A Problem Solver

Respectful

A Critical Thinker

Work Ready

Skilled Socially

An Effective Communicator

The Vision of a Graduate (VoG) at the Connecticut Technical Education and Career System (CTECS) embodies our commitment to preparing students for success in Connecticut's workforce.

Developed in collaboration with students, parents, staff, and employers, the VoG ensures that CTECS students are not only job-ready but also equipped to lead, innovate, and adapt in a dynamic world.

As educators, we are dedicated to developing these qualities by providing a comprehensive education that empowers our students to achieve their fullest potential and make meaningful contributions to society.

A Problem Solver	Work Ready
Problem solvers tackle challenges by identifying root causes of issues, brainstorming solutions, implementing effective strategies, and demonstrating adaptability. ➔ Engage students with open-ended, creative thinking tasks that require both conventional and innovative solutions. ➔ Facilitate group discussions and collaborative projects. ➔ Use real-world scenarios and hands-on activities. ➔ Highlight the importance of effort, persistence, and continuous learning. ➔ Provide regular feedback and encourage reflection.	*To be work-ready includes a combination of technical expertise, soft skills, and personal qualities that ensure a graduate can effectively contribute to the workplace from day one.* ➔ Set high standards for punctuality, responsibility, professionalism, and task completion. ➔ Use project-based learning and collaborative assignments. ➔ Emphasize clear written and verbal communication. ➔ Offer practical exercises like mock interviews and resume workshops. ➔ Integrate technology and teach digital literacy.

Respectful	Skilled Socially
Graduates who embody respectfulness emphasize the importance of treating others with dignity, valuing diversity, and fostering an inclusive and positive environment, both personally and professionally. ➔ Demonstrate personal, interpersonal, and professional skills. ➔ Show respect for diversity. ➔ Model respect through active listening and empathy. ➔ Set clear expectations for respectful interactions. ➔ Promote collaboration and group discussions. ➔ Celebrate respectful behavior. ➔ Address disrespect promptly and constructively.	*Graduates who are skilled socially are equipped to navigate social environments, build relationships, and contribute positively to their communities and workplaces.* ➔ Show awareness of global responsibility to others and the environment. ➔ Participate in community involvement. ➔ Design cooperative group projects and team activities ➔ Set expectations for respect and give regular feedback. ➔ Facilitate discussions on inclusivity, kindness, and respect. ➔ Model positive interactions and recognize strong social skills.
A Critical Thinker	**An Effective Communicator**
Critical thinkers approach problems systematically by analyzing, evaluating, and synthesizing information to make well-informed decisions and contribute to innovative solutions. ➔ Encourage critical thinking individually and collaboratively. ➔ Design lessons that challenge assumptions and explore diverse viewpoints. ➔ Use open-ended questions, rigorous activities, and cross-curricular projects. ➔ Integrate project-based learning and real-world problem-solving. ➔ Offer reflective opportunities like journaling and discussions. ➔ Cultivate an environment that values curiosity and inquiry.	*Effective communicators convey ideas, information, and emotions accurately and persuasively, fostering understanding and collaboration.* ➔ Communicate effectively using oral, written, visual, artistic, and technical modes. ➔ Include group discussions, presentations, and peer reviews. ➔ Promote active listening and thoughtful responses. ➔ Offer clear guidelines and constructive feedback. ➔ Stress clear, respectful, and purposeful communication.

CTECS Instructional Model

CTECS uses the Marzano Compendium to guide research-based instructional strategies that differentiate learning and promote access, engagement, and success for all students. Teachers apply these strategies to support diverse learners (including multilingual learners, students with disabilities, and students with varied academic or technical backgrounds) through scaffolds, modeling, guided practice, and multiple ways to participate and show understanding. This approach ensures every student can work toward proficiency in the Priority Standards and the competencies outlined in the CTECS Vision of a Graduate.

Marzano Compendium

Feedback

Providing and Communicating Clear Learning Goals

1. Providing scales and rubrics
2. Tracking student progress
3. Celebrating success

Using Assessments

4. Using informal assessments of the whole class
5. Using formal assessments of individual students

Content

Conducting Direct Instruction Lessons

6. Chunking content
7. Processing content
8. Recording and representing content

Conducting Practicing and Deepening Lessons

9. Using structured practice sessions
10. Examining similarities and differences
11. Examining errors in reasoning

Conducting Knowledge Application Lessons

12. Engaging students in cognitively complex tasks
13. Providing resources and guidance
14. Generating and defending claims

Using Strategies That Appear in All Types of Lessons

15. Previewing strategies
16. Highlighting critical information
17. Reviewing content
18. Revising knowledge
19. Reflecting on learning
20. Assigning purposeful homework
21. Elaborating on information
22. Organizing students to interact

Context

Using Engagement Strategies

23. Noticing and reacting when students are not engaged
24. Increasing response rates
25. Using physical movement
26. Maintaining a lively pace
27. Demonstrating intensity and enthusiasm
28. Presenting unusual information
29. Using friendly controversy
30. Using academic games
31. Providing opportunities for students to talk about themselves
32. Motivating and inspiring students

Implementing Rules and Procedures

33. Establishing rules and procedures
34. Organizing the physical layout of the classroom
35. Demonstrating withitness
36. Acknowledging adherence to rules and procedures
37. Acknowledging lack of adherence to rules and procedures

Building Relationships

38. Using verbal and nonverbal behaviors that indicate affection for students
39. Understanding students' backgrounds and interests
40. Displaying objectivity and control

Communicating High Expectations

41. Demonstrating value and respect for reluctant learners
42. Asking in-depth questions of reluctant learners
43. Probing incorrect answers with reluctant learner

Curriculum Introduction

This curriculum document outlines the essential learning for this trade program and provides a clear structure for planning, instruction, and assessment. It includes the components required by NEASC Standard 2.2a, along with elements that reflect the unique nature of CTECS technical programs. The curriculum is organized to show what students learn in each course, how learning progresses across grade levels, and how instruction supports both technical skill development and the CTECS Vision of a Graduate.

Teachers should use this document to:

- Understand the overall structure and expectations of the course sequence
- Reference the Course Map to see the scope and sequence of Priority Standards and the alignment to District Summative Assessments (DSAs)
- Use the Priority Standards and Units of Study to guide daily, weekly, and cycle-based planning
- Integrate Big Ideas, Essential Questions, Skills/Learning Outcomes, vocabulary, and resources during lesson design
- Identify required safety, industry, and technical content expectations
- Plan and implement formative assessments to monitor progress and guide instruction
- Prepare students for the District Summative Assessments, ensuring alignment with the Course Map
- Maintain consistency of technical and professional practice instruction across campuses while adapting to student needs and industry-based opportunities

Curriculum Components

Course Map

A Course Map serves as the scope and sequence for this course by outlining the progression of instructional units and the standards that guide teaching and assessment. While each campus will have individual student needs, cycle schedules, and industry-based opportunities, all instructors are expected to teach the standards outlined in the Course Map. Using the Course Map below, teachers will intentionally plan learning experiences that prepare students to meet the identified standards within the designated assessment windows.

Priority Standards (Units of Study)

Priority Standards identify the most essential learning in the trade program. They reflect the core technical competencies, safety practices, and industry-aligned skills that require the greatest instructional focus and appear on program assessments. In CTE programs, each Priority Standard also functions as a Unit of Study, because it includes the required components such as big ideas, essential questions, content topics, and skills/learning outcomes aligned to assessments.

Vertical Alignment

Vertical alignment shows how Priority Standards and instructional expectations progress from grade to grade within the trade program. It provides a clear pathway of skill development, increasing complexity, and technical proficiency across the four-year sequence.

Learning Outcomes

Learning outcomes are what students will know (Concepts) and be able to do (Skills). Concepts identify the major content topics within the Priority Standard (Unit of Study). They appear in the left column of the Learning Outcomes table and follow a similar coding structure as the Priority Standard.

Skills are learning objectives that describe the measurable actions students must be able to perform to demonstrate proficiency. They appear in the right column of the Learning Outcomes table and show the progression of learning evidence in the Priority Standard.

Vocabulary

Essential vocabulary includes the technical and academic terms students must understand and use accurately to engage in trade-specific learning and demonstrate proficiency on assessments. Vocabulary is foundational to safety, technical precision, and industry communication, and should be a primary initial focus within each unit and taught explicitly through modeling, demonstration, and repeated application.

Resources

Resources include the tools, equipment, texts, materials, and digital tools that support learning within each unit and reflect industry standards.

Assessment Practices

Teachers use ongoing formative assessments—such as questioning, checks for understanding, performance demonstrations, reflections, and teacher observation—to monitor progress, guide instruction, and support all learners in mastering the Priority Standards.

Each program also includes District Summative Assessments (DSAs), which measure proficiency on the Priority Standards identified in the Course Map. DSAs provide consistent evidence of student learning across campuses and ensure alignment to industry expectations, safety requirements, and program outcomes. Teachers should reference the Course Map and Units of Study when planning instruction to ensure students have opportunities to practice and demonstrate the skills and knowledge assessed on the DSA.

Carpentry Philosophy

The Carpentry course of studies is designed to help students develop an appreciation for the carpentry and construction industry while building the entry-level skills required for success in the trade. Students will gain technical, academic, and professional skills that support both personal use and a successful transition from school to employment or post-secondary education.

The Carpentry program provides Level I apprenticeship theory and foundational trade content aligned to industry expectations. Students gain practical experience through hands-on learning in the school shop, participation in outside production projects, and optional Work-Based Learning placements with accredited carpentry contractors or cabinetry companies. These experiences help students apply their skills in authentic settings and prepare them for continued growth within the construction industry.

Carpentry - Course Map

Grade 9 - Semester 1 & 2 DSA

- 9.1 Shop Safety
- 9.2 Career Readiness
- 9.3 Hand Tools
- 9.4 Portable Power Tools
- 9.5 Intro to Lumber Processing
- 9.6 Basic Carpentry Math and Layout
- 9.7 Introduction to Wood Products
- 9.8 Basic Wood Joinery
- 9.9 Basic Wood Finishing
- 9.10 Professional Practice in Carpentry

Grade 10 - Semester 1 DSA

- 10.1 Shop/Site Safety
- 10.2 Advanced Carpentry Math and Layout
- 10.3 Advanced Materials in Woodworking
- 10.4 Advanced Joinery
- 10.8 Professional Practice in Carpentry

Grade 10 - Semester 2 DSA

- 10.5 Advanced Stationary Machines
- 10.6 Advanced Portable Power Tools
- 10.7 Cabinetry Woodworking
- 10.8 Professional Practice in Carpentry

Grade 11 - Semester 1 DSA

- 11.1 Shop and Jobsite Safety
- 11.2 Blueprint Reading
- 11.3 Power Tools
- 11.4 Carpentry Math
- 11.5 Building Material and Fasteners
- 11.6 Building Layout
- 11.7 Concrete Construction
- 11.11 Professional Practice in Carpentry

Grade 11 - Semester 2 DSA

- 11.1 Shop and Jobsite Safety
- 11.4 Carpentry Math
- 11.8 Structural Floor Framing
- 11.9 Structural Wall and Ceiling Framing
- 11.10 Roof Framing
- 11.11 Professional Practice in Carpentry

Grade 12 - Semester 1 DSA

- 12.1 Shop and Jobsite Safety
- 12.2 Power Tools Review
- 12.3 Basic Estimation Techniques
- 12.4 Stair Construction
- 12.5 Roofing Materials and Installation
- 12.11 Professional Practice in Carpentry

Grade 12 - Semester 2 DSA

- 12.1 Shop and Jobsite Safety
- 12.6 Doors and Windows
- 12.7 Exterior Wall Finish
- 12.8 Insulation
- 12.9 Interior Wall Finish
- 12.10 Commercial Building Systems
- 12.11 Professional Practice in Carpentry

* See District Summative Assessment (DSA) exam outline for specific breakdown by substandard and learning objectives.

9th Grade Curriculum

Priority Standard 9.1 - Shop Safety

Big Idea(s):

- Safety is the responsibility of everyone in the shop
- Safety needs to be a habit and a consideration throughout daily living as well as in the work environment
- Training and awareness can prevent injuries

Essential Question(s):

- How can hazard awareness prevent accidents?
- Who is ultimately responsible for a safe work environment?
- What are some of the benefits of safe work practices?
- How does one worker's action affect the other workers on a jobsite?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.1.1 Safe Work Habits ● **PPE** ● **Shop Rules** ○ **Horseplay** ○ **Dress code** ● **Housekeeping** ○ **Material Handling and Storage** ● **SDS** ● **Emergency Shut-off** ● **Electrical Safety** ○ **GFCI**	● **Define vocabulary terms related to shop safety** ● **Identify Personal Protective Equipment** ● **Demonstrate appropriate PPE use** ● **Explain the importance of SDS in the shop** ● **Follow shop safety rules** ● **Maintain a clean work area/shop** ● **Locate Emergency shut-offs in shop** ● **Explain the importance of a GFCI** ● **Obtain 100% on written safety test**
9.1.2 Fire Safety ● **Classes of fires** ● **Fire Triangle** ● **Extinguisher Use** ● **Fire Blankets** ● **Fire Alarms / Evacuations**	● **Identify classes of fires** ● **Locate fire extinguishers and blankets in shop** ● **Identify types of extinguishers** ● **Explain the process of extinguishing certain fires** ● **Obtain 100% on written safety test**

Students will know:	*As evidenced by: (oral, written, or performance)*
9.1.3 First Aid ● **Injury Protocols** ● **AED/First Aid locations** ● **Eye Wash Station** ● **Bloodborne Pathogens**	● **Describe procedures for dealing with various injuries.** ● **Explain the dangers bloodborne pathogens** ● **Identify appropriate contact person for blood exposure**

Technical Vocab-

PPE, Dress Code, SDS, Fire Extinguisher. Fire Triangle, Bloodborne Pathogens, AED, Eye Wash Station, Emergency Shut-off, GFCI

Resources-

Modern Cabinetry (GW), OSHA.gov

Priority Standard 9.2 - Career Readiness

Big Idea:

Employability skills are just as important, if not more, than technical skills.

Essential Question(s):

- What are the essential personal and professional skills needed to be successful in Carpentry?
- How can employability skills help to increase the likelihood of success?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.2.1 Job Opportunities ○ **Skills needed** ○ **Current job trends**	● **Research job opportunities in Carpentry** ● **List job requirements for entry-level employment in Carpentry**
9.2.2 Employability Skills ○ **Readiness** ○ **Organization/Housekeeping** ○ **Reliability**	● **Demonstrate good attendance** ● **Adhering to shop rules** ● **Demonstrate Professionalism** ○ **Dress code** ○ **Readiness** ○ **Hygiene**

Technical Vocab-

Professionalism, Organization, Critical thinking, communication skills, motivation.

Resources-

https://www.realityworks.com

Priority Standard 9.3 - Hand Tools

Big Idea(s):

- It is essential for carpenters to be able to identify, select and safely use the appropriate tool for different jobs to be successful
- Using hand tools can be just as dangerous as power tools
- Using the appropriate tool can increase the quality of work

Essential Question(s):

- Why should you use the right tool for the job?
- What are possible repercussions of using the wrong tool for a job and using a tool incorrectly?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.3.1 Hand Tool Identification ● **Measuring/Marking Tools** ● **Saws** ● **Chisels and Planes** ● **Striking and Fastening Tools** ● **Clamps**	● **Identify common hand tools** ● **Explain hand tool uses** ● **Explain the advantage of using hand tools over power tools for certain tasks**
9.3.2 Hand Tool Use ● **Hand Tool selection** ● **Inspection, Maintenance and Handling** ○ Inspecting ○ Sharpening ○ Care ● **Securing work pieces**	● **Explain the importance of the appropriate tool for the job** ● **Explain the dangers of using a damaged tool** ● **Explain the importance of keeping tools sharp and clean** ● Sharpen an edge tool ● **Demonstrate safe use of hand tools** ● **100% on Written Safety Test**

Technical Vocab-

Layout, square, crosscut, rip, kerf, back saw, block plane, chisel, combination square, coping saw, crosscut saw, file, hammer, kerf, nail set, rasp, screwdriver, sliding t-bevel, speed square, steel tape

Resources-

Woodworking Nancy Macdonald, (Cengage Mindtap)

Priority Standard 9.4 - Portable Power Tools

Big Idea(s):

- It is essential to know how to select, safely use, and maintain the proper power tool for completion of the task at hand
- Power tools enable the carpenter to do more work in less time and with less effort

Essential Question(s):

- What factors contribute to selecting power tools?
- How can portable power tools affect time and quality on a project?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.4.1 Portable Power Tool Identification including: ● **Sander** ● **Drills/Drivers** ● **Router** ● Other	● **List and explain the use of various portable power tools** ● **Identify parts and functions of common power tools** ● Choose proper bits/accessories for different applications ● **Choose and use portable power tools appropriately for the intended use of operation**
9.4.2 Portable Power Tool Safety Precautions	● **Inspect tool for safe operation** ● **List safety rules that apply to portable power tools** ● **Demonstrate setup of cut station, including the use of bench vices and clamps to hold material** ● **100% on written and performance safety tests**
9.4.3 Portable Power Tool Operation ○ **Changing accessories:** ■ **Bits** ■ **Sandpaper** ■ Other	● Demonstrate how to safely change bits, grades of sandpaper, etc. ● **Demonstrate proper setup for different operations** ● **Demonstrate safe use through shop projects**

Technical Vocab-

Compound miter saw, Sanders, Jig saw, Table saw, pneumatic tools, Drills, chuck, skill saw. GFCI

Resources-

Modern Cabinetry (GW)

Priority Standard 9.5 - Intro to Lumber Processing

Big Idea:

Stationary machines make finished carpentry work easier and more accurate.

Essential Question(s):

- Why is it necessary to follow a certain order when processing lumber?
- Why might the order of processing be altered to include or exclude certain operations?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.5.1 The Main 5 Operations ● **Rough Crosscutting** ● **Joining** ● **Planing** ● **Ripping** ● **Finish Crosscutting**	● **Identify Purpose for main Stationary Machines and proper order in using them** ● **Identify Machine Parts and Functions**
9.5.2 Stationary Machine Set-Up/Use	● **Inspect for proper setup before using each individual machine** ● **Pass Safety and Performance Tests for Each Machine with a score of 100%** ○ **Radial Arm/Up Cut** ○ **Jointer** ○ **Planer** ○ **Table Saw** ○ Miter Saw
9.5.3 Stationary Machine Operation	● **Mill Rough Lumber Straight and Square** ○ **Rough Crosscut** ○ Flatten Face ○ **Square Edge** ○ **Plane Face Parallel** ○ **Rip Edge Parallel** ○ **Finish Crosscut**

Technical Vocab-

Nominal lumber, Dimensional lumber, bow, check, crack, cup, wane, warp, knot, hard woods, softwoods, cant, grader.

Resources-

Modern Cabinetry (GW)

Priority Standard 9.6 - Basic Carpentry Math and Layout

Big Idea(s):

- Being able to measure is an essential skill for an apprentice
- Accurate measuring and layout are vital to the quality of a project

Essential Question(s):

- How can measuring and math skills help to promote a Carpenter in a workplace?
- How can performing math operations improperly affect the outcome of a customer's materials?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.6.1 Measuring	• **Identifying measurements with 1/16 accuracy** • **Convert Inches into Feet/Inches**
9.6.2 Math	• **Adding measurements (fractions)** • **Subtracting measurements (fractions)** • **Finding center (division)** • Calculate perimeter and area of regular and irregularly shaped rooms • Calculate the volume of a variety of shapes • Convert measurements (Fractions to Decimals)
9.6.3 Layout	• Distinguish between marking for hand or power tool operations. • **Demonstrate accurate layout through shop projects** • **Analyze layout for errors**

Technical Vocab-

Fractions, perimeter, board foot, converting, right angle, square, linear foot

Resources-

Modern Cabinetry (GW)

Priority Standard 9.7 - Introduction to Wood Products

Big Idea(s):

- Different wood products have different qualities and uses
- Wood products with defects can still be used if processed correctly

Essential Question(s):

- How can wood selection increase productivity and profit?
- How can moisture affect a piece of wood?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.7.1 Wood Types	● **Identify basic hardwoods and softwoods** ○ **Coniferous** ○ **Deciduous** ● **Compare and contrast differences between hardwoods and softwoods** ● Contrast panel and solid wood ● Explain the benefits of using sheet goods ● Identify basic sheet goods used in finished Carpentry.
9.7.2 Wood Quality	● **Explain moisture content and its implications to wood** ● **Identify basic wood defects in finish lumber** ○ **Knot** ○ **Cup** ○ **Crown** ○ **Bow** ○ **Twist** ○ **Split** ○ **Wane** ● **Identify board parts and grain direction** ○ **Face** ○ **Edge** ○ **End**
9.7.3 Sizing	● **List common actual/nominal sizes of lumber** ○ **Thickness** ○ **Width**

Students will know:	*As evidenced by: (oral, written, or performance)*
	● **Explain the differences between Rough sawn, S4S and S2S** ● Calculate board feet

Technical Vocab-

Coniferous, Deciduous, sheet goods, lumber grades, S4S, S2S, moldings, boards, structural lumber, board face, board edge, board end, grain, actual dimensions, nominal dimensions

Resources-

Modern Cabinetry (GW)

Priority Standard 9.8 - Basic Wood Joinery

Big Idea(s):

- Some wood joints are selected for aesthetics, some for strength, and some for both
- Wood swelling and shrinking can ruin the quality of a project if the correct joinery isn't used
- Appropriate wood joints can enhance the quality of a project

Essential Question(s):

- How can the selection of a wood joint change the quality of a project?
- What can be done to strengthen a project, while maintaining the look of the project?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.8.1 Common Wood Joints ● **Square Edge (butt)** ● **Miter** ● **Dadoes & Grooves** ● **Rabbets** ● **Dovetail**	● **Identify of common wood joints** ● **Explain the advantage and disadvantage of each joint** ● **Layout joint** ● Select the proper tool for creating the joint ● **Construct joint using hand or power tools**
9.8.2 Common Fasteners	● **Identify types and sizes of nails and screws** ● **Distinguish between drive types of different screws** ● **Demonstrate fastening through shop projects** ○ Face-nailing ○ End-nailing ○ Pre-drilling ○ Countersink ○ Nail setting
9.8.3 Gluing and Clamping ● **Gluing** ○ Common woodworking glues ○ **Proper Gluing techniques** ○ **Cleaning** ● **Clamping** ○ **Common types of clamps** ○ **Proper clamping techniques**	● **Identify common clamps** ● **Identify common woodworking glues** ● **Demonstrate proper preparation and mockup of assembly** ● **Demonstrate gluing and clamping through shop projects**

Technical Vocab-

Box Joint, Dove Tail, Butt joint, Dado, Rabbet, Working time, Box nail, Face nail, screws, pre-drill drill.

Resources-

Modern Cabinetry (GW)

Priority Standard 9.9 - Basic Wood Finishing

Big Idea(s):

- The finish on a project is just as important as the quality of the build
- Unsealed wood projects have a higher likelihood of deteriorating

Essential Question(s):

- How can a finish increase the value of a project?
- What would happen if a wood project was left unfinished?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.9.1 Sanding Techniques	• **Identify common grit sandpaper and its uses** • **Demonstrate appropriate sanding techniques**
9.9.2 Staining Techniques	• **Identify common types of stain** • **Identify techniques for containing stain throughout the shop** • **Review SDS requirements for stain used** • **Select appropriate PPE for use** • **Demonstrate appropriate staining techniques**
9.9.3 Applying Protective Finishes	• **Identify common types of Protective Finishes** • **Identify techniques for containing Protective Finishes throughout the shop** • **Review SDS requirements for Protective Finishes used** • **Select appropriate PPE for use** • **Demonstrate appropriate techniques for applying Protective Finishes**

Technical Vocab-

PPE, SDS, Grit, Grain, Stain, Polyurethane.

Resources-

Modern Cabinetry (GW)

Priority Standard 9.10 - Professional Practice in Carpentry

Big Idea(s):

- Professional and technical skills are demonstrated through the process and product of hands-on construction work
- Construction projects provide opportunities to apply core competencies in real-world settings
- Employability attributes such as communication, problem-solving, and professionalism are critical to success in the trades
- Reflection and portfolio documentation are essential for tracking growth and preparing for career opportunities

Essential Question(s):

- How do professional behaviors and employability skills impact success on the jobsite?
- What construction practices lead to high-quality workmanship?
- How can reflecting on our work help us improve and prepare for future opportunities?
- Why is documenting work experiences important for career readiness?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.10.1 Professionalism and Employability	• **Identify work-ready skills that reflect professionalism on a jobsite or in a workshop** • **Describe how attributes of the CTECS Vision of a Graduate relate to the construction industry** • **Demonstrate respectful behavior, effective communication, social skills, and work readiness while working in team and individual settings** • **Apply critical thinking and problem-solving skills to complete tasks and resolve challenges in a professional setting**

9.10.2 Technical Skills	• **Apply core construction skills including:**
	  ○ **Measuring and layout**
	  ○ **Material selection and prep**
	  ○ **Tool selection and use**
	  ○ **Fastening and assembly**
	• **Demonstrate safe and appropriate practices related to:**
	  ○ **Personal Safety**
	  ○ **Hand and power tools**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Ladders and scaffold** ○ **Various shop equipment** ● **Evaluate quality of work based on project specifications and industry standards** ● **Follow organized processes to complete tasks efficiently and accurately**
9.10.3 Portfolio and Reflection	● **Identify key components of a professional portfolio (e.g., photos, checklists, reflections, resume artifacts).** ● **Upload documentation and evidence of proficiency for each project completed.** ● **Update personal competency checklist to reflect current skill levels and progress.** ● **Reflect on personal growth in both technical and employability skills.**

Technical Vocab-

Workmanship, competency, portfolio, resume, reflection, jobsite, professionalism, proficiency.

Resources-

Modern Cabinetry (GW)

10th Grade Curriculum

Priority Standard 10.1 - Shop and Site Safety (OSHA 10 Credentialing)

Big Idea(s):

- Safety is the responsibility of everyone in the shop
- Safety needs to be a habit and a consideration throughout daily living as well as in the work environment
- Training and awareness can prevent injuries

Essential Question(s):

- How can hazard awareness prevent accidents?
- Who is ultimately responsible for a safe work environment?
- What are some of the benefits of safe work practices?
- How does one worker's action affect the other workers on a jobsite?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.1.1 Safe Work Habits ● **PPE** ● **Shop Rules** ○ **Horseplay** ○ **Dress code** ● **Housekeeping** ○ **Material Handling and Storage** ● **SDS** ● **Emergency Shut-off** ● **Electrical Safety** ○ **GFCI**	● **Identify Personal Protective Equipment** ● **Demonstrate appropriate PPE use** ● **Explain the importance of SDS in the shop** ● **Follow shop safety rules** ● **Maintain a clean work area/shop** ● **Locate Emergency shut-offs in shop** ● **Explain the importance of a GFCI** ● **100% on written safety test**
10.1.2 Fire Safety ● **Classes of fires** ● **Fire Triangle** ● **Extinguisher Use** ● **Fire Blankets** ● **Fire Alarms / Evacuations**	● **Identify classes of fires** ● **Locate fire extinguishers and blankets in shop** ● **Identify types of extinguishers** ● **Explain the process of extinguishing certain fires** ● **100% on written safety test**
10.1.3 First Aid ● **Injury Protocols** ● **AED/First Aid locations** ● **Eye Wash Station** ● **Bloodborne Pathogens**	● **Describe procedures for dealing with various injuries** ● **Explain the dangers bloodborne pathogens**

Students will know:	*As evidenced by: (oral, written, or performance)*
	• **Appropriate contact person** • **100% on written safety test**

Technical Vocab-

Hazard, Safety, Focus, Competent, Leadership, Organized, Responsible, OSHA, PPE, Demonstrate, Push stick, jig, tool guard. First Aid
Resources- Modern Cabinetry (GW)

Resources-

Modern Cabinetry (GW)

Priority Standard 10.2 - Advanced Carpentry Math and Layout

Big Idea(s):

- Being able to measure is an essential skill for an apprentice to be successful
- Accurate measuring and layout are vital to the quality of a project
- Effective planning is crucial to a project's success

Essential Question(s):

- How can measuring and math skills help to promote a Carpenter in a workplace?
- How can accurate blueprints/sketches and planning increase productivity?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.2.1 Measuring	● **Identifying measurements with 1/16 accuracy** ● **Adding measurements (fractions)** ● **Subtracting measurements (fractions)** ● **Finding center (division)** ● **Identify the process of calculating board footage** ● Calculate perimeter and area of regular and irregularly shaped rooms ● Calculate the volume of a variety of shapes ● Convert measurements (Fractions to Decimals)
10.2.2 Carpentry Math	● **Adding measurements (fractions)** ● **Subtracting measurements (fractions)** ● **Finding center (division)** ● **Identify the process of calculating board footage** ● Calculate perimeter and area of regular and irregularly shaped rooms ● Calculate the volume of a variety of shapes ● Convert measurements (Fractions to Decimals)
10.2.3 Layout ● **Mark square and straight lines** ● Templates	● Distinguish between marking for hand or power tool operations. ● **Demonstrate accurate layout through shop projects**

Students will know:	*As evidenced by: (oral, written, or performance)*
	● **Analyze layout for errors**
10.2.4 Drawing and Sketching ● **Rough Sketch and Dimension Project(s)** ● **Devise a cut list from a blueprint or sketch**	● **Identify line types from shop drawings** ○ **Object** ○ **Dimension** ○ **Hidden** ● **Create a rough sketch of a project with dimensions** ● **Layout parts on rough stock to minimize waste**

Technical Vocab-

Fractions, perimeter, board foot, converting, right angle, square, linear foot, dimension, sketch, scale, yield, cut list

Resources-

Modern Cabinetry (GW)

Priority Standard 10.3 - Advanced Materials in Woodworking

Big Idea(s):

- Trees are harvested and sawed into lumber and manufactured products of various sizes and shapes, having a variety of characteristics
- How lumber is milled, dried, and stored has a direct relation to the defects found in each board
- Being able to read grain can give you an advantage in picking the proper board for a project
- Accounting or the movement of wood caused my changes in humidity is an essential part of crafting a quality project

Essential Question(s):

- Which wood products are appropriate for different applications?
- How do the characteristics of wood affect the finished product?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.3.1 Lumber ● Pine ● Oak ● Poplar ● Maple ● Cherry ● Other	● Explain the process for harvesting wood ● Explain the two main drying techniques ○ Pros and Cons of each technique ○ Proper storage ● **Identify common woods used in cabinetry** ● **Compare and contrast wood species for different applications** ● **Identify nominal and actual** ● **Identify types of defects and their causes**
10.3.2 Panel Products ● Structural Panel Products ● Cabinet Grade Plywood ● Particleboard ● MDF ● Hardboard ● Other	● **Identify structural and cabinet grade panel products** ● **Explain uses of different panel products**
10.3.3 Material Yield	● **Identify and explain best uses for wood with defects** ● Identify ways to maximize Material Yield

Technical Vocab-

Pine, Oak, Poplar, Maple, Cherry, Structural Panel Products, Cabinet Grade Plywood, Particleboard, Medium Density Fiberboard, Grade

Resources-

Modern Cabinetry (GW)

Priority Standard 10.4 - Advanced Joinery

Big Idea(s):

- There are many different wood joints each with a specific set of advantages and disadvantages
- Grain orientation, gluing surface, and the mechanical design of some joints make them very strong by themselves while others need reinforcement
- Choosing the correct joint a specific situation is an essential part of crafting a quality project

Essential Question(s):

- What are the most commonly used wood joints and why do you think they are used?
- How can the type of clamp, adhesive and jointed edge affect wide panel construction?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.4.1 Advanced Joinery ● **Pocket Screws** ● **Biscuit** ● Dowel ● Router Dovetail ● Mortise and Tenon ● Cope & Stick	● **Identify advanced joints** ● Compare and contrast advantages and disadvantages of joints depending on their application ● **Assemble a reinforced joint** ● Accounting for Wood Movement in Projects
10.4.2 Wide Panel Construction	● **Explain the process of gluing up a wide panel** ○ **Layout** ○ **Clamps** ○ **Growth ring alteration** ○ **Dry fitting** ● **Select and use proper clamps and materials** ● **Assemble a wide panel**

Technical Vocab-

Box Joint, Dove Tail, Butt joint, Dado, Rabbet, carcass, case joint, lock miter, splined miter. (biscuit joint), Cope & Stick, dowel, pocket hole, glue block.

Resources-

Modern Cabinetry (GW)

Priority Standard 10.5 - Advanced Stationary Machines

Big Idea(s):

- Stationary power tools enable the carpenter to do more work in less time and with less effort
- The number and style of stationary power tools available today for the carpenter is vast, and the list continues to grow
- To achieve accurate results, choosing the correct Stationary Machine and setting it up properly for each task is essential

Essential Question(s):

- What conclusions come from comparing and contrasting industrial stationary power tools versus contractor versions of comparable equipment?
- What do you think an employer expects you to be very proficient at for operations on stationary power equipment?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.5.1 Advanced Use of Main Milling Machines ● **Radial Arm/Up-Cut** ● **Jointer** ● **Planer** ● **Table Saw** ○ **Blade selection and changing** ○ **Guard and splitter setup** ○ Dado Stack Setup ○ Jig making/setup ○ Feather boards	● **Identify purpose of common Stationary Machines in a carpentry shop** ● **Identify and Inspect Machine Parts and Functions** ● **Pass Safety and Performance Tests for Each Machine with a score of 100%** ● **Demonstrate safe use** ● Setup Jigs on machines ● **Identify causes of shop/machine made defects** ○ troubleshoot/fix defects ● **Perform basic machine maintenance** ○ **Changing blades** ○ Clean and wax surfaces
10.5.2. Common Stationary Machines ● **Router Table** ● **Drill Press** ● **Stationary Sanders** ● **Bandsaw** ● Scroll Saw	● **Identify purpose of common Stationary Machines in a carpentry shop** ● **Inspect Tools** ● **Demonstrate safe use** ● **Pass Safety and Performance Tests for Each Machine with a score of 100%**

Students will know:	*As evidenced by: (oral, written, or performance)*
10.5.3 Advanced Stationary Machines ● **Panel Saw** ● **Unique Door Machine** ● **Wide Belt Sander** ● Straight line rip saw ● CNC ● Lathe	● **Identify purpose of advanced Stationary Machines in a carpentry shop** ● **Inspect Tools** ● **Demonstrate safe use** ● **Pass Safety and Performance Tests for Each Machine with a score of 100%**

Technical Vocab-

Crosscutting, cutter head, fence, jointer, kickback, miter, rip cut, shaper, snipe, splitter, stacked dado, table saw, thickness planer, inline rip saw, molder, drum sander, belt sander, panel saw.

Resources-

Modern Cabinetry (GW)

Priority Standard 10.6 - Advanced Portable Power Tools

Big Idea(s):

- It is necessary to be able to select, use, and maintain the proper portable power tool for successful and safe operation
- The use of portable power tools can increase accuracy, productivity, and ease of job completion
- To achieve accurate results, choosing the correct Stationary Machine and setting it up properly for each task is essential

Essential Question(s):

- What factors should be considered when choosing power tools for a specific task?
- How is a portable power tool set up and inspected for safe operation?
- How is the blade/bit/ paper changed?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.6.1 Power Tool Identification ● **Router** ● **Air Nailers** ● **Plate Joiner** ● **Jig Saw** ● **Sanders** ● Power Planer ● Reciprocating Saw ● Circular Saw ● Miter saw ● Multitool ● Other	● **Review Priority Standard 9.4 - Basic Portable Power Tools** ● **Identify parts and functions of common power tools** ● **Choose and install proper bits/accessories for different applications** ● **List and explain the use of various portable power tools** ● **Choose and use portable power tools appropriately for the intended use of operation**
10.6.2 Safety Precautions ● **Electrical safety** ● **Clamping and holding work piece**	● **Inspect tool for safe operation** ● **List safety rules that apply to portable power tools** ● **Demonstrate the use of bench vices and clamps to hold material.** ● **100% on written safety tests where applicable**
10.6.3 Operation ○ **Changing accessories:** ● **Bits** ● **Sandpaper** ● Other	● **Demonstrate how to safely change bits, grades of sandpaper, etc.** ● **Demonstrate proper setup for different operations** ● **Demonstrate safe use through shop projects**

Technical Vocab-

Belt sander, biscuit jointer, skill saw, collet, sliding compound miter saw, disc sander, fixed plate router, jigsaw, palm sander, plunge router, pneumatic tools

Resources-

Modern Cabinetry (GW)

Priority Standard 10.7 - Cabinetry Woodworking

Big Idea(s):

- Cabinets come in a wide variety of styles, materials, finishes, and features to match a customer's specific wants and needs
- Doors and drawers need to be constructed with different wood joints, choosing the right ones will dictate the quality, appearance, and price of a kitchen

Essential Question(s):

- Why are most cabinet parts made from plywood?
- Why are there standard cabinet dimensions?
- Why can't you just choose your own measurements?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.7.1 Cabinet Anatomy ● **Frameless vs face frame** ● **Base, wall, and tall cabinets** ● **Standard Dimensions** ● **Hardware Identification** ● **Hinges and slides** ● **Knobs and pulls**	● **Identify common cabinet components** ● **Select appropriate cabinet hardware**
10.7.2 Cabinet Construction ● **Case and Face Frame Assembly** ● **Drawer and Door Assembly** ● **Hardware Installation**	● **Construct case and face frame** ○ **Select, choose, and use appropriate wood joints** ● **Construct drawer and door** ○ **Select, choose, and use appropriate wood joints** ● **Install proper cabinet hardware**
10.7.3 Countertop Types	● Identify common counter types ● Compare and contrast advantages and disadvantages of countertop materials
10.7.4 Basic Print Reading and Kitchen Layout ○ Plan and elevation views ○ Working triangle	● Sketch and layout a basic kitchen ● Decipher sizes from a plan

Technical Vocab-

Base, wall, & tall cabinets, vanities, casework, 32-millimeter cabinet, face frame, rails, stiles, mullion, raised panel door, flat panel door

Resources-

Modern Cabinetry (GW)

Priority Standard 10.8 - Professional Practice in Carpentry

Big Idea(s):

- Professional and technical skills are demonstrated through the process and product of hands-on construction work
- Construction projects provide opportunities to apply core competencies in real-world settings
- Employability attributes such as communication, problem-solving, and professionalism are critical to success in the trades
- Reflection and portfolio documentation are essential for tracking growth and preparing for career opportunities

Essential Question(s):

- How do professional behaviors and employability skills impact success on the jobsite?
- What construction practices lead to high-quality workmanship?
- How can reflecting on our work help us improve and prepare for future opportunities?
- Why is documenting work experiences important for career readiness?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.8.1 Professionalism and Employability	• **Identify work-ready skills that reflect professionalism on a jobsite or in a workshop** • **Describe how attributes of the CTECS Vision of a Graduate relate to the construction industry** • **Demonstrate respectful behavior, effective communication, social skills, and work readiness while working in team and individual settings** • **Apply critical thinking and problem-solving skills to complete tasks and resolve challenges in a professional setting**

10.8.2 Technical Skills	• **Apply core construction skills including:**
	  ○ **Measuring and layout**
	  ○ **Material selection and prep**
	  ○ **Tool selection and use**
	  ○ **Fastening and assembly**
	• **Demonstrate safe and appropriate practices related to:**
	  ○ **Personal Safety**
	  ○ **Hand and power tools**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Ladders and scaffold** ○ **Various shop equipment** ● **Evaluate quality of work based on project specifications and industry standards** ● **Follow organized processes to complete tasks efficiently and accurately**
10.8.3 Portfolio and Reflection	● **Identify key components of a professional portfolio (e.g., photos, checklists, reflections, resume artifacts)** ● **Upload documentation and evidence of proficiency for each project completed** ● **Update personal competency checklist to reflect current skill levels and progress** ● **Reflect on personal growth in both technical and employability skills**

Technical Vocab-

Workmanship, competency, portfolio, resume, reflection, jobsite, professionalism, proficiency

Resources-

Modern Cabinetry (GW)

Priority Standard 10.9 - Introduction to Residential Construction (OPTIONAL)

Big Idea:

Proper construction ensures that a house can withstand everyday elements and support other framing members.

Essential Question:

What materials and techniques are best suited for ensuring structural integrity and safety?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.9.1 Portable Power Tools	Score 100% on safety tests for each tool
10.9.2 Residential Construction Methods	• Identification and use of common construction materials • Identification and use of common construction fasteners • Identification and use of common construction methods

Technical Vocab-

Ceiling joist, common stud, corner post, cripple stud, dimensional lumber, fire stop, header, jack stud, king stud, load bearing, on center, partition intersection, plate, rough sill, sheathing

Resources-

Modern Carpentry (GW)

11th Grade Curriculum

Priority Standard 11.1 - Jobsite Safety

Big Idea(s):

- Safety is the responsibility of everyone in the shop
- Safety needs to be a habit and a consideration throughout daily living as well as in the work environment
- Training and awareness can prevent injuries

Essential Question(s):

- How can hazard awareness prevent accidents?
- Who is ultimately responsible for a safe work environment?
- What are some of the benefits of safe work practices?
- How can no lost time accidents benefit you as a business owner?
- How does one worker's action affect the other workers on a jobsite?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.1.1 Review of safe work habits: ● **hand tools,** ● **Personal Safety** ● **Job-Site Safety** ● **SDS** ● Other	● **Demonstrate safe practices** ● **Evaluate construction site work areas for potential hazards** ● **Explain the consequences of unsafe working conditions in construction** ● **Demonstrate the safe handling of hand tools** ● **Advocate for your personal safety** ● **Score 100% on the written Safety Test and hands-on assessment as new tools and equipment are introduced**
11.1.2 Review of Fire Safety Procedures Locate: ● Fire alarms ● Fire extinguishers ● Eye wash stations ● Power shut offs ● Fire exits ● Other	● Identify fire alarms, fire extinguishers, eye wash stations, and power shut-offs ● Identify types of fires ● Describe the fire triangle ● Explain the protocol for extinguishing fires ● **Score 100% on the written safety test**
11.1.3 First Aid Awareness	● **Identify appropriate practices for administering first aid** ● **Explain the procedures for dealing with various injuries on outside production**

Students will know:	*As evidenced by: (oral, written, or performance)*
	• Explain the dangers of blood borne pathogens.
11.1.4 Personal Protective Equipment • **Hard hat** • **Safety glasses** • **Hearing protection** • **Respirators/Dust Masks** • **Safety shoes** • **Gloves** • Other	• **Identify common types of PPE** • **Select appropriate PPE** • **Demonstrate appropriate use of PPE**
11.1.5 Ladder and Scaffold Safety • **Step ladders** • **Extension ladders** • Pipe staging • Ladder jacks • **Pump jacks** • Wall brackets • **Roof Brackets** • Other	• **Identify common types of ladders and scaffolds** • **Inspect equipment for damage or defects** • **Set-up ladders and scaffolding in the school setting and on the job site safely** • **Appropriately utilize safe practices while using equipment** • **100% on written and performance safety tests**

11.1.6 Fall Protection Systems
• **Personal fall arrest system**
  ○ **connector**
  ○ **5-point harness**
  ○ **anchor point**
• **Guard rails**
• **Safety nets**
	• **Identify components of each fall protection system**
	• **Describe the process of setting up fall protection systems**
	• **Setup and use a personal fall arrest system**

11.1.7 Material Handling	• Identify safe lifting practices • **Demonstrate safe lifting practices**

Technical Vocab-

Braces, competent person, extension ladder, fall protection, guard rails, mud sill, OSHA, PPE, SDS, staging, step ladder

Resources-

Modern Carpentry (GW)

Priority Standard 11.2 - Blueprint Reading

Big Idea (s):

- Carpenters must be able to interpret critical information from construction drawings
- Accurate field measuring and sketching are vital in creating scaled drawings
- Information from scaled drawings must be obtained in order to ensure project accuracy and obtain proper permits throughout the construction process

Essential Question (s):

- What information can be found in a set of construction drawings?
- Why are there different views in a set of construction drawings?
- Why are building codes and the permitting process important to the safety and wellbeing of homeowners?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.2.1 Blueprint Lines and Symbols	• **Identify common lines and symbols used in blueprint reading** • **Select appropriate lines and symbols for their specific use**
11.2.2 Blueprint Views • **Plans** • **Plot** • Foundation • Framing • **Floor** • **Elevation** • Sections • Details • **Schedules**	• Identify differences between orthographic and pictorial • **List common views found in a set of construction prints** • **Describe information provided by each blueprint view** • **Locate specific information needed for construction using a set of construction drawings**
11.2.3 Scaling	• **Interpret measurements on scaled drawings using an architect's scale** • **Convert between actual and scaled measurements** • Draw a scaled drawing using an architect’s scale
11.2.4 Field Measuring and Sketching	• **Identify measurements needed for construction** • Obtain and record accurate field dimensions • Sketch 2D and 3D representations of a construction project, accurately and neatly

Students will know:	*As evidenced by: (oral, written, or performance)*
11.2.5 Scaled Drawings	● **Interpret written and sketched information needed to draw blueprint views to industry standards** ● **Produce a basic scaled floor plan with appropriate lines, symbols, dimensions and other appropriate criteria**
11.2.6 Permitting Process	● **Identify documentation required for building projects** ● Describe local procedures needed for building process ▪ Permits ▪ Inspections ▪ Certificate of Occupancy

Technical Vocab-

Architects scale, details, elevations, floor plan, foundation plan, framing plan, plot plan, scale, symbols

Resources-

Modern Carpentry (GW)

Priority Standard 11.3 - Power tools

Big Idea(s):

- It is essential to know how to select, safely use, and maintain the proper power tool for completion of the task at hand
- Power tools enable the carpenter to do more work in less time and with less effort

Essential Question:

What factors should be considered when choosing power tools for a specific task?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.3.1 Portable Power Tool Safety ● **Electrical safety** ● **Maintenance and inspection.** ● **Clamping and holding materials** ● **Changing accessories:** ○ **Blades** ○ **Bits** ○ **Sandpaper** ○ Other	● **Demonstrate the safe operating techniques according to manufacturer's instructions** ● **Safely change blades, bits, sandpaper, etc.** ● **List general safety rules that apply to portable power tools** ● **Demonstrate lock out/tag out procedures** ● **Demonstrate the use of clamping devices to hold material and other cut station setup methods**
11.3.2 Portable Power Tool Identification ● **Reciprocating saw** ● **Sliding compound miter saw** ● **Drill** ● **Circular saw** ● Other	● **List and explain the intended use of each portable power tool** ● **Select proper blades and accessories for various applications**
11.3.3 Powder Actuated Tools Safety	● **Pass a safety course on the use of powder –actuated tools** ● **List appropriate PPE and security measures needed for safe operation** ● Select proper load and fastener for the intended use ● Demonstrate the safe use of powder actuated tools according to the manufacturer's recommendations
11.3.4 Pneumatic Tool Safety	● **List safety rules that apply to pneumatic tool safety**

Students will know:	*As evidenced by: (oral, written, or performance)*
	● **Demonstrate the safe use of pneumatic tools according to the manufacturer's recommendations** ● **Score 100% on a written and performance safety test**
11.3.5 Stationary Machine Review ● Margin of safety ● Main purpose ● Steps for use ● Make adjustments to machines ● Changing of blades, bits, sandpaper, ECT.	● Evaluate the safety condition of equipment before using ● Demonstrate safe use of stationary equipment ● Demonstrate lock out/tag out procedures ● **Score 100% on a written and performance safety test (for applicable stationary power tools)**

Technical Vocab-

Arbor, chuck, circular saw, collet, drill, orbital sander, pneumatic tool, powder actuated tool, reciprocating saw, router, saber saw, carbide, tungsten, combination blade

Resources-

Modern Carpentry (GW)

Priority Standard 11.4 - Carpentry Math

Big Idea(s):

- Math is an essential component of carpentry in order to figure amounts of materials and calculate sizes of building components
- Being able to measure is an essential skill for an apprentice
- Accurate measuring and layout are vital to the quality of a project
- Effective planning is crucial to a project's success

Essential Question:

How can measuring and math skills help to promote a Carpenter in a workplace?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.4.1 Measuring	• **Identifying measurements with 1/16 accuracy** • **Adding measurements (fractions)** • **Subtracting measurements (fractions)** • **Finding center (division)** • **Calculate perimeter and area of regular and irregularly shaped rooms** • **Calculate the volume of a variety of shapes** • **Convert measurements (Fractions to Decimals)** • **Convert measurements (Inches to Feet)**
11.4.2 Carpentry Math	• **Adding measurements (fractions)** • **Subtracting measurements (fractions)** • **Finding center (division)** • **Calculate perimeter and area of regular and irregularly shaped rooms** • **Calculate the volume of a variety of shapes** • **Convert measurements (Fractions to Decimals)** • **Convert measurements (Inches to Feet)**

Technical Vocab-

Fractions, perimeter, area, converting, right angle, square, linear foot

Resources-

Modern Carpentry (GW)

Priority Standard 11.5 - Building Material and Fasteners

Big Idea(s):

- Building material must be handled, cut, and fastened properly to achieve a safe and desirable end result
- Engineered lumber reduces manufacturing waste and improves the strength of wood products
- It is important for carpenters to know how to properly select the most appropriate fastener for various materials under different conditions

Essential Question(s):

- What factors impact material selection?
- How has engineered lumber changed the building industry?
- What would be the outcome of selecting the improper fastener?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.5.1 Dimensional Lumber ● **common sizes,** ● grade stamps, ● **defects** ● spans ● other	● **Recognize and identify lumber, including common defects** ● Discuss how various factors of lumber affect overall construction ● **List nominal vs. actual sizes of framing material**
11.5.2 Sheet Goods ● species ● grade stamps ● **common sizes** ● traditional sheet goods ● engineered sheet goods ● **installation techniques**	● **Recognize and identify various types of sheet goods** ● Discuss how weather conditions affect construction ● **Explain proper installation techniques**
11.5.3 Engineered Lumber ● **LVL (Laminated Veneer Lumber)** ● **I-Joist (Engineered Truss)** ● **Glulam** ● **PSL (Parallel Strand Lumber)** ● **LSL (Laminated Strand Lumber)** ● **SIPS (Structural Insulated Panel System)** ● Other	● **Recognize and identify engineered lumber** ● Discuss how engineered lumber is made ● **Compare and contrast conventional lumber and engineered lumber**
11.5.4 Common Fasteners ● **Nails** ● **Screws** ● **Carriage bolts**	● **Identify types, sizes, and uses of fasteners** ● **Select proper fasteners for materials and conditions**

Students will know:	*As evidenced by: (oral, written, or performance)*
● **Hangers** ● **Adhesives** ● Other	● **Select proper adhesives for materials and conditions**

Technical Vocab-

Anchors, box nail, carriage bolts, common nails, duplex nail, finish nail, glulam, hangers, lag screws, LSL, LVL, masonry nails, PSL, roofing nails, wood I-beams

Resources-

Modern Carpentry (GW)

Priority Standard 11.6 - Building Layout

Big Idea(s):

- The first step in construction is locating where the building will be laid on the lot
- Accuracy in layout allows for smooth transitions from one phase of construction to another, saving time, effort, and money

Essential Question(s):

- What must be considered when locating a home on a building lot?
- What would the end result be if errors were made in the layout process?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.6.1 Builder's Level ● **Identify the parts of a builder's level** ○ **Tripod** ○ **Scope** ○ **Leveling screw** ○ Other ● **Setup and use of a builder's level**	● **Identify and describe the parts of a builder's level** ● **Properly setup and operate a builder's level** ● **Demonstrate determining and transferring elevations and grades**
11.6.2 Laser Level	Demonstrate how to properly set up and use the laser level
11.6.3 Building Layout ● **Use batter boards, etc.** ● **Use leveling tools** ● **Squaring** ● Excavation ● Foundation depth ● Other	**Layout a mock foundation on flat ground recording all calculations and procedures**

Technical Vocab-

Batter board, benchmark, builder's level, cross hair, elevation, focus knob, height of instrument, laser level, leveling rod, leveling screw, scope, tripod

Resources-

Modern Carpentry (GW)

Priority Standard 11.7 - Concrete Construction

Big Idea:

Understanding the characteristics of concrete is essential for the construction of reliable concrete forms, the correct handling of freshly mixed material, and the final quality of hardened concrete.

Essential Question:

How is concrete used?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.7.1 Concrete Safety ● **Safety** ● **Lifting / placement techniques** ● **Types**	● **List health and safety hazards when working with concrete** ● Discuss how different types of cement are manufactured
11.7.2 Concrete Ingredients ● **Ratios** ● Additives ● **Cement types** ● Sand ● Gravel ● other	● Discuss the effects that ratios, additives, types of cement, sand, size, pit run gravel, colorants and water quality can have on the finished product ● Describe ways to mix cement ● Discuss advantages of ordering from a concrete batch plant vs. mixing your own ● **Identify methods for calculating concrete**
11.7.3 Concrete Forms	**Identify forms used for footings, walls, and slabs**

Technical Vocab-

Additives, admixtures, aggregates, concrete, footings, form panels, forms, frost line, keyway, ratio, rebar, slab, snap ties, volume, cubic feet, cubic yards, monolithic, sono tube

Resources-

Modern Carpentry (GW)

Priority Standard 11.8 - Structural Floor Framing

Big Idea:

Layout and install floor framing to ensure the building performs as expected.

Essential Question:

How can the framing affect the house's strength and efficiency?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.8.1 Floor Framing Members and Terms. ● **balloon frame** ● **platform frame** ● Timber/post-and-beam ● **on center** ● **girder** ● **lally column** ● **sills** ● **floor joists** ● **bridging** ● **span** ● **subfloor** ● other	● **Define and explain the purpose of each floor framing member** ● **Identify various floor framing parts from illustrations**
11.8.2 Floor Framing Processes	● **Layout a band joist according to a given floor plan** ● **Discuss how appropriate dimensions for floor joists are determined** ● **Describe framing around stairwells and floor openings** ● Identify purposes of bridging ● **Explain the installation of the subfloor** ● Compare and contrast how framing with engineered lumber differs from conventional framing
11.8.3 Girder construction ● **Engineered lumber** ● **Steel beams** ● **Lally Columns** ● Span and load transfer	● **Define and identify terms associated with girder construction** ● Identify and discuss different girder construction techniques

Technical Vocab-

Anchor bolt, balloon frame, band joist, bridging, deflection, dimensional lumber, fire stop, floor joist, girder, lally columns, on center, platform frame, subfloor, sill, sill sealer, tail joist, trimmer joist

Resources-

Modern Carpentry (GW)

Priority Standard 11.9 - Structural Wall and Ceiling Framing

Big Idea:

Structural wall framing practices ensure that a house can withstand everyday elements and support other framing members.

Essential Question:

How can wall framing affect the house's strength and efficiency?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.9.1 Wall and Ceiling Framing Members and Terms. ● **on center** ● **studs** ● **trimmer/jack** ● **header** ● **cripples** ● **sills/plates** ● **ceiling joists** ● other	● **Define and explain the purpose of wall and ceiling framing members** ● **Identify various wall and ceiling framing parts from illustrations**
11.9.2 Wall and Ceiling Framing Processes	● **Layout wall plates** ● **Discuss framing around openings, at corners, etc.** ● Describe a typical wall section ● **Explain squaring and erection of wall sections** ● Describe ceiling joist installation methods ● **Explain wall sheathing installation**

Technical Vocab-

Ceiling joist, common stud, corner post, cripple stud, dimensional lumber, fire stop, header, jack stud, king stud, load bearing, on center, partition intersection, plate, rough sill, sheathing

Resources-

Modern Carpentry (GW)

Priority Standard 11.10 - Roof Framing

Big Idea:

Roof framing offers the carpenter the opportunity to demonstrate a superior understanding of framing.

Essential Question:

What skills would a carpenter need to successfully frame a roof?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.10.1 Roof Types ● **Gable roof** ● **Shed roof** ● **Hip roof** ● **Intersecting roof** ● **Gambrel roof** ● **Mansard roof** ● Butterfly roof ● Other	**Identify and describe common roof types.**
11.10.2 Common Roof Framing Terms: ● **Unit run** ● **Total span** ● **Unit rise** ● **Total run** ● **Total rise** ● **Line length** ● **Pitch** ● **Slope** ● **Bird's mouth** ● **Plumb line** ● **Level line** ● **Ridge** ● **Common rafters** ● **Hip rafters** ● **Valley rafters** ● **Jack rafters** ● **Collar ties** ● **Gable studs** ● Other	● **Define common roof framing terms** ● **Identify common roof members and parts of a rafter**
11.10.3 Common Rafter Length Calculations	**Calculate the line lengths of common rafters.**

Students will know:	*As evidenced by: (oral, written, or performance)*
11.10.4 Common Rafter Layout	● **Demonstrate the use of a framing square** ● **Layout common rafters** ● Construct a gable roof
11.10.5 Hip rafter length calculations and layout.	● Calculate the line length of hip rafters. ● Layout a simple hip rafter.
11.10.6 Trusses and their components.	Describe and identify parts of a truss.

Technical Vocab-

Bird's mouth, butterfly roof, collar ties, common rafter, dormer, gable roof, gable studs, gambrel roof, hip rafter, hip roof, intersecting roof, jack rafter, level line, line length, mansard roof, pitch, plumb line, ridge, shed roof, slope, span, total rise, total run, unit length, unit rise, unit run, valley rafter

Resources-

Modern Carpentry (GW)

Priority Standard 11.11 - Professional Practice in Carpentry

Big Idea(s):

- Professional and technical skills are demonstrated through the process and product of hands-on construction work
- Construction projects provide opportunities to apply core competencies in real-world settings
- Employability attributes such as communication, problem-solving, and professionalism are critical to success in the trades
- Reflection and portfolio documentation are essential for tracking growth and preparing for career opportunities

Essential Question(s):

- How do professional behaviors and employability skills impact success on the jobsite?
- What construction practices lead to high-quality workmanship?
- How can reflecting on our work help us improve and prepare for future opportunities?
- Why is documenting work experiences important for career readiness?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.11.1 Professionalism and Employability	• **Identify work-ready skills that reflect professionalism on a jobsite or in a workshop** • **Describe how attributes of the CTECS Vision of a Graduate relate to the construction industry** • **Demonstrate respectful behavior, effective communication, social skills, and work readiness while working in team and individual settings** • **Apply critical thinking and problem-solving skills to complete tasks and resolve challenges in a professional setting**

11.11.2 Technical Skills	• **Apply core construction skills including:**
	  ○ **Measuring and layout**
	  ○ **Material selection and prep**
	  ○ **Tool selection and use**
	  ○ **Fastening and assembly**
	• **Demonstrate safe and appropriate practices related to:**
	  ○ **Personal Safety**
	  ○ **Hand and power tools**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Ladders and scaffold** ○ **Various shop equipment** ● **Evaluate quality of work based on project specifications and industry standards** ● **Follow organized processes to complete tasks efficiently and accurately**
11.11.3 Portfolio and Reflection	● **Identify key components of a professional portfolio (e.g., photos, checklists, reflections, resume artifacts)** ● **Upload documentation and evidence of proficiency for each project completed** ● **Update personal competency checklist to reflect current skill levels and progress** ● **Reflect on personal growth in both technical and employability skills**

Technical Vocab-

Workmanship, competency, portfolio, resume, reflection, jobsite, professionalism, proficiency

Resources-

Modern Carpentry (GW)

12th Grade Curriculum

Priority Standard 12.1 - Jobsite Safety

Big Idea(s):

- Safety is the responsibility of everyone in the shop
- Safety needs to be a habit and a consideration throughout daily living as well as in the work environment
- Training and awareness can prevent injuries

Essential Question(s):

- How can hazard awareness prevent accidents?
- Who is ultimately responsible for a safe work environment?
- What are some of the benefits of safe work practices?
- How can no lost time accidents benefit you as a business owner?
- How does one worker's action affect the other workers on a jobsite?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.1.1 Review of Safe Work Habits: ● **hand tools,** ● **Personal Safety** ● **job-site safety** ● **SDS** ● Other.	● **Demonstrate safe practices** ● **Evaluate construction site work areas for potential hazards** ● **Explain the consequences of unsafe working conditions in construction** ● **Demonstrate the safe handling of hand tools** ● **Advocate for your personal safety** ● **Score 100% on the written Safety Test and hands-on assessment as new tools and equipment are introduced**
12.1.2 Review of Fire Safety Procedures Locate: ● Fire alarms ● Fire extinguishers ● Eye wash stations ● Power shut offs ● Fire exits ● Other	● Identify fire alarms, fire extinguishers, eye wash stations, and power shut-offs ● Identify types of fires ● Describe the fire triangle ● Explain the protocol for extinguishing fires ● **Score 100% on the written safety test**
12.1.3 First Aid Awareness	● **Identify appropriate practices for administering first aid**

Students will know:	*As evidenced by: (oral, written, or performance)*
	• **Explain the procedures for dealing with various injuries on outside production** • Explain the dangers of blood borne pathogens
12.1.4 Personal Protective Equipment Including: • **Hard hat** • **Safety glasses** • **Hearing protection** • **Respirators/Dust Masks** • **Safety shoes** • **Gloves** • Other	• **Identify common types of PPE** • **Select appropriate PPE** • **Demonstrate appropriate use of PPE**
12.1.5 Ladder and Scaffold Safety • **Step ladders** • **Extension ladders** • Pipe staging • Ladder jacks • **Pump jacks** • Wall brackets • **Roof Brackets** • Other	• **Identify common types of ladders and scaffolds** • **Inspect** • **Set-up ladders and scaffolding in the school setting and on the job site safely** • **Appropriately used** • **100% on written and performance safety tests**

12.1.6 Fall Protection Systems
• **Personal fall arrest system**
  ○ **connector**
  ○ **5-point harness**
  ○ **anchor point**
• **Guard rails**
• **Safety nets**
	• **Identify components of each fall protection system**
	• **Describe the process of setting up fall protection systems**
	• **Setup and use a personal fall arrest system**

12.1.7 Material Handling	• Identify safe lifting practices • **Demonstrate safe lifting practices**
12.1.8 Review Lead Safe Weatherization Module (8 Hour Course) (Optional)	• Score 100% on the written Lead Safe Weatherization test • Show the safe handling of lead contaminated materials and tools • List personal protective equipment used when conducting LSW • List safety rules for each LSW task • Identify possible LSW contamination issues

Students will know:	*As evidenced by: (oral, written, or performance)*
	● Practice Tier I and Tier II LSW techniques ● Discuss safe disposal of lead contaminated debris

Technical Vocab-

Braces, competent person, extension ladder, fall protection, guard rails, ladder jacks, mud sill, OSHA, pipe staging, PPE, pump jack, roofing brackets, sawhorses, scaffolds, staging planks, step ladder, wall brackets

Resources-

Modern Carpentry (GW)

Priority Standard 12.2 - Power Tools (review)

Big Idea(s):

- It is essential to know how to select, safely use, and maintain the proper power tool for completion of the task at hand
- Power tools enable the carpenter to do more work in less time and with less effort

Essential Question:

What factors should be considered when choosing power tools for a specific task?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.2.1 Portable Power Tool Safety ● **Electrical safety** ● **Maintenance and inspection.** ● **Clamping and holding materials** ● **Changing accessories:** ○ **Blades** ○ **Bits** ○ **Sandpaper** ○ Other	● **Demonstrate the safe operating techniques according to manufacturer's instructions** ● **Safely change blades, bits, sandpaper, etc.** ● **List general safety rules that apply to portable power tools** ● **Demonstrate lock out/tag out procedures** ● **Demonstrate the use of clamping devices to hold material**
12.2.2 Portable Power Tool Identification ● **Reciprocating saw** ● **Sliding compound miter saw** ● **Drill** ● **Circular saw** ● Other	● **List and explain the intended use of each portable power tool** ● **Select proper blades and accessories for various applications**
12.2.3 Powder actuated tool safety	● **Pass a safety course on the use of powder –actuated tools** ● **List appropriate PPE and security measures needed for safe operation** ● Select proper load and fastener for the intended use ● Demonstrate the safe use of powder actuated tools according to the manufacturer's recommendations
12.2.4 Pneumatic tool safety	● **List safety rules that apply to pneumatic tool safety**

Students will know:	*As evidenced by: (oral, written, or performance)*
	● **Demonstrate the safe use of pneumatic tools according to the manufacturer's recommendations** ● **Score 100% on a written and performance safety test**
12.2.5 Stationary Machines Review ● Margin of safety ● Main purpose ● Steps for use ● Make adjustments to machines ● Changing of blades, bits, sandpaper, ECT.	● Evaluate the safety condition of equipment before using ● Demonstrate safe use of stationary equipment ● Demonstrate lock out/tag out procedures ● **Score 100% on a written and performance safety test (for applicable stationary power tools)**

Technical Vocab-

Belt sander, bits, blades, carbide-tipped, chamfers, circular saw, dovetails, drill, hammer drills, orbital sander, pneumatic, powder-actuated drivers, reciprocating saw, router, saber saw, sandpaper, taper, templates

Resources-

Modern Carpentry (GW)

Priority Standard 12.3 - Basic Estimation Techniques

Big Idea:

Students understand the importance of accurate estimates and its correlation to successful completion of the job.

Essential Question(s)

- What would be the outcome of not estimating correctly?
- How can incorrect estimation lead to job complications?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.3.1 Review Carpentry Math	● **Adding measurements (fractions)** ● **Subtracting measurements (fractions)** ● **Finding center (division)** ● **Calculate perimeter and area of regular and irregularly shaped rooms** ● **Calculate the volume of a variety of shapes** ● **Convert measurements (Fractions to Decimals)** ● **Convert measurements (Inches to Feet)**
12.3.2 Estimate concrete	**Determine the amount of concrete needed.**
12.3.3 Floor Framing Estimation ● **sill** ● **floor joists** ● **subfloor** ● **other**	**Determine the amount of material needed for the floor frame.**
12.3.4 Wall Framing Estimation ● **plates** ● **studs** ● **headers** ● **wall sheathing** ● **other**	**Determine the amount of material needed for the wall framing.**
12.3.5 Roof Framing Estimation ● **ridge** ● **rafters** ● **fascia** ● **roof sheathing**	**Determine the amount of material needed for the roof framing.**

Students will know:	*As evidenced by: (oral, written, or performance)*
• **other**	
12.3.6 Roofing Estimation • **ice and water shield** • **underlayment** • **asphalt shingles** • **cap** • **drip edge** • **ridge vent** • **other**	**Determine the amount of roofing materials needed.**
12.3.7 Exterior Wall Finish Estimation • **Tyvek** • **siding** • **accessories** • **other**	**Determine the amount of exterior finish materials needed.**

Technical Vocab-

Volume, cubic feet, cubic yards, linear feet, area, perimeter, square footage, square equivalent

Resources-

Modern Carpentry (GW)

Priority Standard 12.4 - Stair Construction

Big Idea:

Stairs must be carefully designed and laid out to ensure safe passage and ease of use.

Essential Question(s):

What important safety rules and codes must be considered when laying out stairs?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.4.1 Stair construction terms: ● **unit rise** ● **unit run** ● **total rise** ● **total run** ● **tread** ● **riser** ● **headroom** ● **nosing** ● **handrail** ● **baluster** ● **stringer** ● other	● **Identify common parts of a staircase** ● **Define stair construction terms and the purpose of common staircase parts**
12.4.2 Stair Stringer Calculation and Layout	● **Determine riser height and tread run** ● **Layout a stair stringer** ● Discuss appropriate angles for stairways and headroom
12.4.3 Handrail and balustrade requirements	Identify code requirements for handrails and balustrades.

Technical vocab-

Baluster, balustrade, closed stairway, handrail, headroom, housed stringer, landing, newel post, nosing, open stairway, riser, stair carriage, stairwell, stringer, total rise, total run, tread, unit rise, unit run

Resources-

Modern Carpentry (GW)

Priority Standard 12.5 - Roofing Materials and Installation

Big Idea(s):

- Identify various roofing materials and techniques to weatherize a home
- Successfully install all components to an asphalt shingle roof according to climate, purpose, and desired appearance

Essential Question:

What would be the outcome of an improperly installed roof?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.5.1 Roofing terms: ● **Asphalt shingles (three tab versus architectural)** ● Metal sheet roofing ● **Courses** ● **Coverage** ● **Ice & water shield** ● **Drip edge** ● **Exposure** ● **Felt flashing** ● **Lap** ● **Ridge cap** ● **Roofing cement** ● **Ridge vent** ● **Roof vent** ● Other	● **Identify common materials used in roofing applications** ● **Define common terms used in roofing applications**
12.5.2 Common roofing types and applications: ● **Asphalt shingles** ● Metal roofing ● Roll roofing ● Other	● **Identify common materials used in roofing** ● **List common applications for each material**
12.5.3 Asphalt Shingle installation	● Describe safe handling of roofing materials ● **Demonstrate how to shingle a roof with three-tab shingles and architectural shingles**

Technical vocab-

Architectural shingles, asphalt felt, asphalt shingles, courses, coverage,
cricket, drip edge, end lap, exposure, flashing, head lap, ice and water shield, metal roofing,
ridge cap, ridge vent, roofing cement, saddle, square, starter course, three-tab shingles, top lap

Resources-

Modern Carpentry (GW)

Priority Standard 12.6 - Doors and Windows

Big Idea(s):

- Successful weather tight installation of windows and doors saves energy by reducing fuel costs, minimizes maintenance, and makes installing exterior siding easier
- Care must be taken to provide easy-operating, weather-tight, attractive units
- Quality workmanship results in a more comfortable interior

Essential Question:

What are the defining qualities of a properly installed door or window?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.6.1 Door Types ● **head jamb** ● **side jambs** ● **sill** ● **threshold** ● **stops** ● **pre-hung** ● **sizing** ● **hardware** ● **swing/handing** ● **pocket doors** ● other	● **Identify and describe door types** ● **Identify and describe the parts of exterior/interior doors and door frames**
12.6.2 Exterior Door Installation	● **Describe proper exterior door installation** ● **Describe the process of installing flashing for an exterior door** ● **Describe the importance of following the manufacturer's requirements for installation**
12.6.3 Interior door installation	Describe proper interior door installation.
12.6.4 Window **Types,** ● **sash** ● **head jamb** ● **side jambs** ● **sill** ● **blind stops** ● **double-hung window** ● **casement window** ● **awning window**	● **Identify and describe window types** ● **Identify and describe the parts of windows and window frames** ● **Identify and describe window types**

Students will know:	*As evidenced by: (oral, written, or performance)*
● **bay/bow window** ● other	
12.6.5 Window Installation	● **Describe proper window installation** ● **Describe the process of installing flashing for a window** ● **Describe the importance of following the manufacturer's requirements for installation**

Technical vocab-

Head jamb, side jamb, sill, threshold, stops, prehung door, sizing, swing, handing, hardware, lockset, sash, lights, stiles, rails, drip cap, flashing, double-hung window, casement window, awning window, flush door, raised panel door, bifold door, sliding door, pocket door

Resources-

Modern Carpentry (GW)

Priority Standard 12.7 - Exterior Wall Finish

Big Idea(s):

- Identify various exterior finish materials and techniques to weatherize a home
- Successfully install exterior wall finish components to climate, purpose, and desired appearance

Essential Question(s):

- What are some of the ways exterior finishes enhance the home's appearance and function?
- What types of specialized fields are associated with exterior finish?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.7.1 Exterior Finish Materials ● **Flashing** ● **Vinyl siding** ● **Wood siding** ● **Fiber cement (Hardie Plank)** ● **Exterior plastic trim (AZEK)** ● **Cornices** ● Other	● **Identify and describe common exterior finishing materials** ● Discuss advantages and disadvantages of various materials
12.7.2 Exterior Finish Materials Installation. ● **Flashing** ● **Vinyl siding** ● **Wood siding** ● **Fiber cement (Hardie Plank)** ● **Exterior plastic trim (AZEK)** ● **Cornices** ● Other	**Describe the installation of common exterior finishing materials.**
12.7.3 Exterior Trim Components ● **corner boards/post** ● water table ● frieze board ● **window and door casing** ● **fascia** ● **soffits** ● **rakes/eaves** ● other	**Identify and describe common exterior trim components.**
12.7.4 Gutters and Downspouts	Identify and describe common gutter components.

Technical vocab-

Clap board, coil stock, cornice, downspout, flush door, frieze, gutter, house wrap, j-channel, rake, starter strip, undersill trim, siding, soffit, fascia

Resources-

Modern Carpentry (GW)

Priority Standard 12.8 - Insulation

Big Idea:

Insulation prevents the loss of heat in cold seasons and resists the passage of heat into air-conditioned areas in the hot seasons.

Essential Question(s):

- How does climate and location affect how a structure is insulated?
- Why is it important for a house to have thermal efficiency?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.8.1 Weatherization Terminology ● Heat Transfer ● **Conduction** ● **Convection** ● **Radiation** ● **Thermal** ● **Acoustical** ● Greenhouse Effect ● **R-value (thermal resistance)** ● Composite R-value ● U-factor (thermal transmittance) ● Other	**Describe terms used in insulation installation.**
12.8.2 Insulation ● **Flexible (Fiberglass batts)** ● **Cellulose (Loose fill & dense pack)** ● **Rigid Board (Polyisocyanurate with or without foil)** ● **Closed and open cell foam** ● Pipe Sleeves ● Rockwool/Mineral Wool ● Vermiculite (Asbestos Concern!)	● **Describe the various materials in which they can be made** ● Describe safe handling ● Describe the importance of proper installation techniques
12.8.3 Building Envelope Characteristics (Green Step) ● Stack effect ● Wind effect ● Mechanical effect ● First and Second Law of Thermodynamics ● Conditioned versus Unconditioned living space ● Infiltration/Exfiltration	● Discuss the effects on a house during the winter/summer ● Illustrate differences between boundaries ● List possible types of building ventilation

Students will know:	*As evidenced by: (oral, written, or performance)*
● Thermal Boundary ● Air Boundary ● Vapor Boundary ● Ventilation ● Mechanical Ventilation ● Supply Only ● Exhaust Only	
12.8.4 Attic ventilation ● **Ridge vent** ● **Soffit vent** ● **Gable vent** ● **Roof vent** ● Baffles (Wind wash)	**Determine the location of attic ventilation required.**
12.8.5 Home efficiency ● home auditing ● materials ● products	Set up a blower door.

Technical Vocab-

Composite R-value, condensation, conditioned living space, conduction, convection, exfiltration, greenhouse effect, heat transfer, infiltration, insulation, Law of Thermodynamics, mechanical effect, R-value, radiation, stack effect, thermal envelope, U-factor, unconditioned living space, vapor retarder, ventilation, wind effect, BTU

Resources-

Modern Carpentry (GW)

Priority Standard 12.9 - Interior Wall Finish

Big Idea(s):

- Finish carpentry involves the application of molding around windows and doors; at the intersection of walls, floors, and ceilings into other surfaces
- Proper installation of drywall and taping methods are used to achieve the desired appearance

Essential Question:

What are some of the ways interior finishes enhance the home's appearance and function?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.9.1 Common Interior Finish Materials. ● **Drywall** ● **Interior trim** ● **Other**	● **Identify and describe common interior finishing materials** ● **Discuss advantages and disadvantages of various materials**
12.9.2 Millwork ● **Window trim/casing** ● **Door trim/casing** ● Crown Molding ● Stool ● **Baseboard** ● Chair rail ● Shoe Molding ● Wainscotting ● Mantle Surround ● Other	● **Identify and describe common types of millwork** ● Trim out typical door or window applications
12.9.3 Drywall Construction: ● **Types of drywall** ● Safe practices for lifting and holding ● **Installing drywall** ● **Finishing drywall** ● Other	● **Identify and describe types of drywall** ● Describe safe practices for lifting and holding ● **Describe the procedure for installing drywall** ● **Describe the procedure for finishing drywall**

Technical Vocab-

Apron, base board, casing, cope, corner bead, gypsum board, joint compound, joint reinforcing tape, millwork, miter, moisture resistant gypsum board, stool, type X gypsum board

Resources-

Modern Carpentry (GW)

Priority Standard 12.10 - Commercial Building Systems

Big Idea(s):

- The framing of steel stud walls is quite similar to framing with wood
- With some additional equipment Carpenters are able to easily adapt to different construction methods using steel framing
- Suspended ceilings allow ceilings to be lowered while keeping mechanicals hidden from view

Essential Question:

How does commercial building differ from residential?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.10.1 Steel Framing: ● **Steel wall framing components** ● Framing techniques	● **Identify and describe steel framing components for a wall** ● Identify steel wall framing techniques
12.10.2 Suspended Ceilings ● **Suspended Ceiling Components** ○ **Main Runners** ○ **Cross Tees** ○ **Wall Angle** ○ **Hanger Lags** ○ **Hanger Wire** ○ **Ceiling Panels** ● Installation Techniques	● **Identify and describe suspended ceiling components** ● Describe suspended ceiling installation techniques

Technical Vocab-

Flange, web, studs, channels, tracks, wall angles, main runners, cross tees, hanger wires, ceiling panels

Resources-

Modern Carpentry (GW)

Priority Standard 12.11 - Professional Practice in Carpentry

Big Idea(s):

- Professional and technical skills are demonstrated through the process and product of hands-on construction work
- Construction projects provide opportunities to apply core competencies in real-world settings
- Employability attributes such as communication, problem-solving, and professionalism are critical to success in the trades
- Reflection and portfolio documentation are essential for tracking growth and preparing for career opportunities

Essential Question(s):

- How do professional behaviors and employability skills impact success on the jobsite?
- What construction practices lead to high-quality workmanship?
- How can reflecting on our work help us improve and prepare for future opportunities?
- Why is documenting work experiences important for career readiness?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.11.1 Professionalism and Employability	● **Identify work-ready skills that reflect professionalism on a jobsite or in a workshop** ● **Describe how attributes of the CTECS Vision of a Graduate relate to the construction industry** ● **Demonstrate respectful behavior, effective communication, social skills, and work readiness while working in team and individual settings** ● **Apply critical thinking and problem solving skills to complete tasks and resolve challenges in a professional setting**
12.11.2 Technical Skills	● **Apply core construction skills including:** ○ **Measuring and layout** ○ **Material selection and prep** ○ **Tool selection and use** ○ **Fastening and assembly** ● **Demonstrate safe and appropriate practices related to:** ○ **Personal Safety** ○ **Hand and power tools**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Ladders and scaffold** ○ **Various shop equipment** ● **Evaluate quality of work based on project specifications and industry standards** ● **Follow organized processes to complete tasks efficiently and accurately**
12.11.3 Portfolio and Reflection	● **Identify key components of a professional portfolio (e.g., photos, checklists, reflections, resume artifacts)** ● **Upload documentation and evidence of proficiency for each project completed** ● **Update personal competency checklist to reflect current skill levels and progress** ● **Reflect on personal growth in both technical and employability skills**

Technical Vocab-

Workmanship, competency, portfolio, resume, reflection, jobsite, professionalism, proficiency

Resources-

Modern Carpentry (GW)