CTECS Architecture Curriculum

CTECS
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Connecticut Technical Education and Career System
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A CTECS Graduate is…

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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

Rev. 1-2026

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.

Architecture – Philosophy

The philosophy of the Connecticut Technical Education and Career System's ADT program is to provide our students with theoretical knowledge, analytical problem solving, and application skills necessary for entry-level employment in the ever-changing built environment and preparation for post-secondary education. "Sustainable design is a design philosophy that seeks to maximize the quality of the built environment, while minimizing or eliminating negative impact to the natural environment.

This philosophy is put into effect using a Standard-based curriculum and comprehensive work-based learning that provides options and alternatives for learning; and is designed to accommodate varying types of gifts, talents, strengths, needs, and interests.

Architecture – Course Map

Grade 9: Semester 1 & 2

- 9.1 Architectural Foundations & Math
- 9.2 Architectural Views
- 9.3 Architectural History
- 9.4 Architectural Communication
- 9.5 Career Readiness & Employability
- 9.6 Professional Practice in Architecture

Grade 10: Semester 1

- 10.1 Architectural Communication Technologies - Software
- 10.2 Architectural Drawing Standards
- 10.3 Architectural Documentation and Blueprint Reading
- 10.4 Site Plans and Plot Plans
- 10.5 Residential Foundation Systems
- 10.11 Professional Practice in Architecture

Grade 10: Semester 2

- 10.6 Residential Framing Systems
- 10.7 Residential Assemblies (floors and walls)
- 10.8 Residential Roofing Systems
- 10.9 Architectural Elements
- 10.10 Career Readiness and Employability
- 10.11 Professional Practice in Architecture

Grade 11: Semester 1

- 11.1 Residential Building Codes & Safety
- 11.2 Residential Sustainability/Energy Efficiency
- 11.3 Electrical Systems
- 11.4 Plumbing Systems
- 11.5 HVAC
- 11.10 Professional Practice in Architecture

Grade 11: Semester 2

- 11.6 Social Aspects of Architecture
- 11.7 Advanced Communication Techniques
- 11.8 Alternative Construction Materials & Techniques
- 11.9 Firm Dynamics
- 11.10 Professional Practice in Architecture

Grade 12: Semester 1

- 12.1 Building Codes
- 12.2 Accessible Design
- 12.3 Building Information Modeling for Commercial Architecture
- 12.4 Site Analysis and Design for Commercial Architecture
- 12.5 Commercial Construction Materials and Assemblies
- 12.9 Professional Practice in Architecture

Grade 12: Semester 2

- 12.6 Commercial Energy Efficiency
- 12.7 Construction Documents
- 12.8 Architecture Portfolio
- 12.9 Professional Practice in Architecture

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

9th Grade Curriculum

Priority Standard 9.1 – Architectural Foundations and Mathematics

Big Idea(s):

- **Clear and accurate drawings are essential in the architectural industry.**
- **Utilizing Drafting industry standards is required for clear communication among contractors and clients**
- **Design process is the key to successfully articulating a design solution**

Essential Question(s):

- **Why is it important to follow industry drafting standards?**
- **Why is following the steps of the design process so important?**
- **Why is it so important that drawings are clear and understandable?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.1.1 Scale	• **Interpret measurements on scaled drawing using an architect's scale** • **Convert between actual and scaled measurements** • **Draw a scaled drawing using an architect's scale** • **Demonstrate the appropriate use of an architect's scale**
9.1.2 Inches/ Feet Conversion	• **Convert inches to feet and feet to inches.**
9.1.3 Square footage (Area)	• **Calculate square footage of structures** • **Demonstrate the ability to work from square footage in a case study to produce space shape options.**
9.1.4 Drafting Tools	• **Identify basic drafting equipment** • **Describe the function of drafting equipment** • **Demonstrate proper use of basic drafting equipment**
9.1.5 Lettering	• **Demonstrate proper technique using the Ames Lettering guide to produce neat freehand lettering**
9.1.6 Line types and Line weights • **Construction Lines** • **Hidden Lines**	• **Identify the correct linetypes while developing an orthographic drawing**

Students will know:	*As evidenced by: (oral, written, or performance)*
• **Phantom Lines** • **Center Lines** • **Object Lines** • **Section Lines** • **Borderlines**	• **Select the correct linetypes while developing an orthographic drawing**
9.1.7 Design Process • **Define the problem** • **Collect information and research** • **Brainstorm and analyze** • **Develop and find solution** • **Feedback** • **Refine and improve design**	• **Demonstrate and utilize the design process from start to finish during project-based assessment.**

Technical Vocab-

Analyze, angle, arc, axes, axis, bisect, border lines, brainstorm, case study, center, lines, circle, circumscribe, concentric, construct, construction lines, conversion, diagonal, diameter, divide, division, drafting, ellipse, equilateral triangle, feedback, geometric, hexagon, hidden lines, horizontal, legible, inclined, intersect, length, lettering, Object lines, octagon, parallel, parallel bar, parallelogram, pentagon, perpendicular, phantom lines, radius, rectangle, section lines, scale, square, square, footage, T-square, tangent, terminate, trace, transfer, triangle, uniform, vellum, vertical

Resources-

Architecture by Kicklighter/Thomas (GW)

Priority Standard 9.2 - Architectural Views

Big Idea(s):

- **Orthographic Projection is used to develop the various drawings used in the field of Architecture.**
- **Perspective drawings are used to help the client envision the project being developed.**

Essential Question(s):

- **Why is it important to use orthographic projections in developing architectural drawings?**
- **Why is it important to develop a perspective drawing when working with a client?**
- **Why are architectural industry standards so important to use when completing architectural drawings?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.2.1 Orthographic Projection ● **Top** ● **Side (left and right)** ● **Front** ● **Section** ● **Rear**	● **Identify the different views of an orthographic projection** ● **Explain how orthographic projections are used in the development of architectural drawings** ● **Create an orthographic drawing with all six views**
9.2.2 Floor Plans ● **Wall thickness** ● **Windows** ● **Doors** ● **Millwork (including uppers)** ● **Appropriate line weights and line types**	● **Design a floor plan using bubble diagrams and test fit plans** ● **Create a floor plan to industry standards**
9.2.3 Elevations	● **Identify information an elevation drawing communicates** ● **Create elevation drawings using measurements from a room and from a floor plan** ● **Identify industry standard heights, line types and line weights** ● **Create elevations using industry standard heights, line types and line weights**
9.2.4 Isometrics	● **Explain the importance of an isometric drawing as a tool**

Students will know:	*As evidenced by: (oral, written, or performance)*
	• **Create an isometric drawing from an object and a floor plan**

9.2.5 Perspectives	• **Explain the importance of a perspective drawing as tool when working with a client**
	• **Create a 1-point perspective and a 2 point perspective using:**
	  ◦ **Horizon line**
	  ◦ **Vanishing points**
	  ◦ **View point**
	  ◦ **Orthogonal lines**
	  ◦ **Ground plane**

Technical Vocab-

Bubble diagram, Elevation, horizon line, industry standard, isometric, ground plane, line weight, line type, orthogonal lines, orthographic projection, perspective, pictorial, test fit plan, vanishing point, view, view point

Resources-

Architecture by Kicklighter/Thomas (GW)

Priority Standard 9.3 - Architectural History

Big Idea(s):

Architectural History informs current architectural styles and uses.

Essential Question(s):

- **Why is it important to study historic Architecture?**
- **Why is it important to understand vernacular Architecture today?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.3.1 Architectural Styles ● **Colonial** ● **Victorian** ● **Neoclassical** ● **Mid-Century** ● **Post-Modernist** ● **Contemporary**	● **Identify American Architectural styles** ● **Explain the characteristics of American Architectural styles**
9.3.2 Vernacular Architecture ● **Sustainability**	● **Define Vernacular Architecture** ● **List the sustainability features of living off grid** ● **Compare and contrast traditional architecture and Vernacular architecture**

Technical Vocab-

Colonial, Victorian, Neoclassical, mid-century, post-modernist, contemporary, vernacular architecture

Resources-

Architecture by Kicklighter/Thomas (GW)

Priority Standard 9.4 - Architectural Communication Techniques

Big Idea(s):

Clear Architectural communication eliminates miscommunication between stakeholders and the design.

Essential Question(s):

- **Why is clear communication in Architecture so important?**
- **How can we communicate ideas with clients and contractors?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.4.1 Model Building	• **Identify model making tools** • **Execute a conceptual building model to scale**
9.4.2 Color Theory	• **Identifying the meaning and importance of different colors** • **Demonstrate the ability to put together a full color scheme based on a theme**
9.4.3 Design Principles • **Emphasis** • **Balance and alignment** • **Contrast** • **Repetition** • **Proportion** • **Movement** • **White space**	• **Identify the 7 Architectural design principles** • **Compare and Contrast the 7 architectural principles** • **Use the 7 Architectural design principles**

9.4.4 Introduction to Computer Programs
• **AutoCAD**
• **Revit**
• **Sketchup**
	• **Describe the types of computer programs used by Architects**
	• **Explain how Autocad software is used in architectural design and documentation**
	• **Utilize Autocad to draft floor plan components to industry standards**
	  ◦ **Workspace**
	  ◦ **Draw commands**
	  ◦ **modify/edit commands**
	  ◦ **Layers**
	  ◦ **Line types/weights**
	  ◦ **Tool palette/design center**

9.4.5 Rendering ● **Color pencil** ● **Pencil (graphite)**	● **Identify rendering type** ● **Create rendering using color pencil** ● **Create rendering using Pencil**

Technical Vocab-

Alignment, architectural model, AutoCAD, balance, color theory, computer aided design, conceptual, contrast, design principles, emphasis, movement, proportion, rendering, repetition, Revit, SketchUp, white space

Resources-

Architecture by Kicklighter/Thomas (GW)

Priority Standard 9.5 - Career Readiness and Employability

Big Idea(s):

- **Career Readiness and Employability is of critical importance**
- **Employability skills are just as important, if not more, than technical skills**

Essential Question(s):

- **Why are employer expectations so critical to understand?**
- **What are the essential personal and professional skills needed to be successful in Architecture?**
- **How can employability skills help to increase the likelihood of success?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
9.5.1 Employment Opportunities ● **Skills needed** ● **Current job trends**	● **Research job opportunities in Architecture** ● **List job requirements for entry-level employment in Architecture**
9.5.2 Employment skills ● **Readiness** ● **Organization/Housekeeping** ● **Reliability**	● **Demonstrate good attendance** ● **Adhering to shop/office rules** ● **Demonstrate Professionalism** ○ **Dress code** ○ **Readiness** ○ **Hygiene**
9.5.3 Employment Expectations	● **List employer expectations**

Technical Vocab-

Body language, dress code, employment standards, expectations, interview, preparedness, portfolio, resume

Resources-

Architecture by Kicklighter/Thomas (GW)

Priority Standard 9.6 - Professional Practice in Architecture

Big Idea(s):

- **Professional and technical skills are demonstrated through the process and product of hands-on architectural work**
- **Architectural 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 in Architecture?**
- **What 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)*
9.6.1 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.**
9.6.2 Technical Skills	● **Apply core architectural standards including:** ○ **Line types** ○ **Line weights** ○ **Drawing organization** ○ **Layout techniques** ● **Demonstrate accuracy, clarity and neatness related to:**

	○ **Scale and dimensions** ○ **Visual Communication** ○ **Oral communication** ● **Evaluate quality and completeness of work based on project specifications and industry expectations.** ● **Follow organized and time-efficient processes to complete tasks efficiently and accurately.**
9.6.3 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 –

Architecture- Residential Drafting and Design (GW)

10th Grade Curriculum

Priority Standard 10.1 - Architectural Communication Techniques - Software

Big Idea(s):

- **Proper use of software is essential to efficiently communicate concepts and ideas**
- **Technology can increase efficiency and accuracy of drawings**

Essential Question(s):

- **Why is it important to know how to use industry standard software?**
- **How do software skills change based on the software used?**
- **How does the application of software affect the success of a project?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.1.1 AutoCAD/AutoCAD Architecture ● **Opening, Closing files, Splash Screen** ● **Saving - with proper name and location** ● **User interface** ● **New drawing setup - units, snaps, etc.** ● **Draw and Modify commands, grips** ● **Drawing angled lines** ● **Measuring tools** ● **Accuracy - object snaps, ortho** ● **Hatch** ● **Create a template file** ● **Organization using Layers** ● **Line types and line weights** ● **Annotations - dimensions and text** ● **Blocks** ● **Plotting/Printing/Scaling - model space/paper space** ● **Paper space - title blocks, viewport, scaling** ● **Import images/pdf's**	● **Identify and locate parts of the interface and splash screen** ● **Explain uses for various draw and modify commands** ● **Demonstrate proper use of draw and edit commands for efficiency and accuracy** ● **Explain terms for various sheet and print/output commands** ● **Demonstrate proper knowledge of sheet organization and output commands** ● **Apply industry graphics and standards for project documentation and completion.**
10.1.2 Adobe Suite ● **Acrobat Pro and Photoshop** ○ **User interface and splash screen** ○ **Files - existing, new, editing, saving, printing**	**Acrobat** ● **Identify and locate parts of the interface and splash screen** ● **Apply procedure for modifying, reviewing, and converting files**

○ **Utilizing for drawing markups** ○ **Exporting into other software**	● **Demonstrate procedure for importing and exporting files** ● **Demonstrate proper procedure for printing**
	Photoshop ● **Identify and locate parts of the interface and splash screen** ● **Demonstrate procedure for importing and exporting files** ● **Compare/contrast image resolution, file size, and file types** ● **Experiment with and evaluate selection and masking techniques** ● **Experiment with and evaluate painting and retouching tools** ● **Demonstrate proper procedure for creating of and editing images** ● **Demonstrate proper procedure for printing**
10.1.3 Sketchup (web-based version) ● **User interface and splash screen** ● **Files - existing, new, editing, saving, printing** ● **Import/Export files** ● **Basic concepts** ● **Model tools** ● **Editing tools** ● **Material tools** ● **3D Warehouse**	● **Identify and locate parts of the interface and splash screen** ● **Demonstrate procedure for importing and exporting files** ● **Demonstrate understanding of basic concepts, modeling, editing, and material tools.** ● **Identify online resources for content such as 3D Warehouse.**

Technical Vocab –

Interface and Splash Screen, Units, Osnaps, Grips, Ortho, Hatch, Template File, Layers, Line types and line weights, Annotations, Blocks, Model Space, Paper Space, Title blocks, Viewport, Scaling

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.2 - Architectural Drawing Standards

Big Idea(s):

- **It is necessary to understand and be able to properly use architectural drawing standards**
- **Proper use of architectural drawing standards will reduce communication and construction errors**
- **Creating a drawing template file will save time and ensure graphical consistency**

Essential Question(s):

- **How can incomplete or misuse of drawing standards affect a job?**
- **Are drawing standards the same for all types of drawings?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.2.1 Linework ● **Line types** ○ **Construction Lines** ○ **Hidden Lines** ○ **Phantom Lines** ○ **Center Lines** ○ **Object Lines** ○ **Section Lines** ○ **Borderlines** ● **Line weight**	● **Identify "the alphabet of lines".** ● **Explain the importance of using various line types and line weights on drawings.**
10.2.2 Common Drawing Scales	● **Identify common drawing scales.** ● **Explain proper application of drawing scales.**
10.2.3 Hatching ● **General hatch** ● **Material hatch** ● **Line weights/screening**	● **Explain the importance of using hatch patterns.** ● **Identify common hatch patterns.** ● **Create a drawing representation for each type in plan, section/detail view, and elevation.**
10.2.4 Annotations ● **Symbols for cross reference** ○ **Elevation (exterior and interior)** ○ **Sections and details** ○ **Datum (elevations, sections, details)** ○ **Door and window tags** ● **Dimensions** ○ **Size of components (dim styles)**	● **Identify various annotations on a drawing.** ● **Explain the importance and use of annotations.** ● **Create a drawing representation for each type in plan, section/detail view, and elevation at various scales.**

Students will know:	*As evidenced by: (oral, written, or performance)*
○ **Placement (exterior/interior)** ● **Text**	
10.2.5 Sheet Graphics ● **Drawing sizes** ● **Title Blocks and borders** ● **Overall organization** ● **View labeling** ● **Drawing numbering standards**	● **Identify common sheet/title block sizes.** ● **Create a drawing representation for each common sheet/title block size.**

Technical Vocab –

Scale, proportion, hatch pattern, annotations, title block

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.3 - Architectural Documentation Sets and Basic Blueprint Reading

Big Idea(s):

- **The number and type of drawings in a set will depend on the complexity of the project and intended use**
- **Drawings require different levels of completeness and graphics based on their intended use**
- **Architects are often required to create drawings showing other trades related designs**

Essential Question(s):

- **How will a set of drawings be used and by whom?**
- **How much information and details should my drawings show?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.3.1 Types of Drawing Sets ● **Presentation Drawings** ● **Working Drawings** ● **Construction Drawings**	● **Identify common architectural drawing sets.** ● **Explain the purpose and use of each set.** ● **Identify and describe examples of each set and their contents.**
10.3.2 Types of Drawings ● **Title Sheet** ● **General Notes, Details, Abbreviations** ● **Site Plan** ● **Foundation Plan** ● **Floor Plan** ● **Elevations** ● **Wall Sections and Building Sections** ● **Details** ● **Reflected Ceiling Plans** ● **MEP** ● **Schedules and Notes**	● **Identify common types of architectural drawings.** ● **Explain the purpose and use of each type of drawing.** ● **Identify and explain the contents of each drawing.**

Technical Vocab –

Poche, Textures, Shadow/Shading, Entourage, Program, Charrette, Bubble Diagram, Schematic Design, Design Developments, Construction Documentation, Construction Administration, Occupancy

Resources

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.4 - Site Plans and Plot Plans

Big Idea(s):

- **Site characteristics must be evaluated early in the design process**
- **Every parcel of land is described for legal purposes**
- **A structure can be built just about anywhere**

Essential Question(s):

- **What are some environmental impacts of site selection?**
- **How does site design preserve or enhance the environment?**
- **How does a site influence a building's design?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.4.1 Site plans and Plot Plans ● **Components** ○ **Property lines** ○ **Setback lines** ○ **Contour lines** ○ **Existing/new site features** ○ **Existing/new buildings and surrounding elements** ○ **Vegetation** ○ **Utilities** ○ **Labels** ○ **Material indications** ○ **Dimensions** ○ **North arrow**	● **Compare and contrast uses of site plans and plot plans.** ● **Identify the common components found on a site plan and a plot plan.** ● **Create a site plan and plot plan.**
10.4.2 Site Analysis ● **Diagramming** ○ **features and considerations** ○ **soil type, natural feature** ○ **techniques and common graphics** ● **Research resources** ○ **GIS website, Locally, Google Earth**	● **Define a site analysis and explain its importance.** ● **Explain the importance of site selection as it relates to environmental impact.** ● **Identify areas of a site analysis to analyze and explain the importance of each.** ● **Explain the importance of diagramming.** ● **Identify procedures and resources for completing an analysis.** ● **Locate resources for performing an analysis.** ● **Perform a site analysis and visually sketch/diagram your results.**
10.4.3 Site Topography	● **Define contours and explain their importance.** ● **Explain how contours are represented in drawing.**

Students will know:	*As evidenced by: (oral, written, or performance)*
	• **Compare and Contrast types of contours characteristics.** • **Create site topography diagram.**
10.4.4 Site Building Orientation • **purpose for a particular site** • **location and accessibility** • **access to local materials** • **access to local utilities** • **topography**	• **Identify and explain factors that influence building location and orientation on a site.** • **Locate and sketch a building and surrounding feature on a site drawing.**

Technical Vocab –

site plan, plot plan, sensitive site (LEED), high priority site (LEED) topography, site analysis, site diagramming, GIS, setbacks, contours, contour elevation, contour profile, utilities, soil types

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.5 - Residential Foundation Systems

Big Idea(s):

- **All structures need a foundation**
- **Foundation design depends on many factors**

Essential Question(s):

- **How does the site influence a building's type of foundation?**
- **Other than the site, what are some factors that influence a building's foundation design?**
- **How does foundation design contribute to energy efficiency and overall efficient home performance?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.5.1 Foundation Types ● **Slab-on-grade** ● **Continuous stem wall and footing** ○ **Crawlspace** ○ **Full height basement** ● Columns/Piers ○ Concrete columns ○ Helical piers ● Stepped foundations	● **Identify common foundation systems.** ● **Compare/Contrast types of foundation systems, their uses, and factors that may influence their application.**
10.5.2 Foundation Systems and Materials ● **Poured Concrete** ● Insulated Concrete Forms (ICF'S) ● **Stone** ● **Brick shelf** ● Precast concrete	● **Identify foundation materials.** ● **Compare/Contrast advantages and disadvantages of each.** ● **Compare and contrast the environmental impact of each system.**
10.5.3 Foundation Components ● **Common component** ○ **Footing** ■ **continuous** ■ **isolated** ○ **Compacted earth** ○ **Gravel** ○ **Vapor barrier** ○ **Slab** ○ **Perimeter drains** ○ **Stem wall** ○ **Damp Proofing** ○ **Rigid insulation** ○ **Anchor bolt**	● **Identify common components** ● **Define each component** ● **Explain the function(s) of each component** ● **Create a drawing representation for each in plan, section/detail view, and elevation.**

Students will know:	*As evidenced by: (oral, written, or performance)*
○ **Beam pocket** ■ **Beams/Girders** ○ **Lally columns** ○ **Steel reinforcing** ■ **Bars** ■ **WWM (welded wire mesh)** ● **Common component graphics - Plan, Elevation, Section, Detail**	

Technical Vocab –

Poured Concrete, Insulated Concrete Forms (ICF'S), Brick shelf, Continuous Footing, Isolated Footing, Compacted earth, Gravel, Vapor barrier, Perimeter drain, Stem wall, Damp Proofing, Rigid insulation, Anchor bolt, Beam pocket, Steel rebars, WWM (welded wire mesh), Beams/Girders, Lally columns, Span, On Center

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.6 - Residential Framing Systems

Big Idea(s):

- **A house is built with careful consideration for its structural stability**
- **A house is only as strong as the weakest link in the system**

Essential Question(s):

- **How can specific situations dictate the appropriate type of structural framing?**
- **What factors must be considered when completing load calculations?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.6.1 Building Loads ● **Dead** ● **Live** ● **Wind/Uplift** ● **Flood** ● Seismic	● **Identify common loads on a building.** ● **Explain the function(s) of each load and how it affects the structural integrity of the building.** ● **Determine local loads that will affect a building's design.**
10.6.2 Building Framing Methods ● **Timber/Post and Beam** ● **Balloon** ● **Platform**	● **Identify past and present framing methods.** ● **Define and describe each method of framing.**

Technical Vocab –

Span, Sill sealer/gasket, PT Sill plate, Header/rim joist, Header, Joist, Blocking/bridging, Sub-floor, finished floor, Sheathing, 2x dimensional lumber, TJI's, Trusses, Joist Hangers, Deforestation

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.7 - Residential Assemblies (floor and wall)

Big Idea(s):

Code requirements and design will influence assembly construction.

Essential Question(s):

- **How does the framing method affect the assembly?**
- **How does the assembly construction contribute to overall energy efficiency?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.7.1 Floor System Components ● **Sill sealer/gasket** ● **PT Sill plate** ● **Header/rim joist** ● **Header** ● **Joist** ○ **2x dimensional lumber** ○ TJI's/Engineered lumber ● **Blocking/bridging** ● **Sub-floor** ● **Finished floor** ● Trusses ● Joist Hangers ● Insulation types	● **Identify common components of a floor frame system.** ● **Explain the function(s) of each component.** ● **Identify and explain floor framing around an opening.** ● **Compare and contrast the use of dimensional lumber, TJI's, and Trusses.** ● **Create a drawing representation for each in plan, section/detail view, and elevation.**
10.7.2 Framing Size Calculations ● **Span** ● **Building code span tables**	● **Identify floor framing span tables in the build code.** ● **Explain the purpose(s) of understanding "span" related to floor framing size.** ● **Determine floor framing size.** ● **Create a framing plan.**
10.7.3 Wall System Components ● **Plates** ○ **sole** ○ **sill** ● **Studs** ○ **wall** ○ **cripple** ○ **trimmer/jack/king** ● **Blocking** ● **Header** ● **Sheathing** ○ **OSB** ○ **Plywood**	● **Identify common components.** ● **Define each component.** ● **Explain the function(s) of each component.** ● **Create a drawing representation for each in plan, section/detail view, and elevation.**

Students will know:	*As evidenced by: (oral, written, or performance)*
○ **Zip system** ● **Vapor barrier** ● **Insulation** ● Rainscreen wall	
10.7.4 Wall Systems Exterior and Interior (Materials and Trim Options) ● **Vinyl** ● **stucco** ● **wood - clapboard, shakes, board & batten** ● **masonry** ● **fiber cement**	● **Identify common exterior finishes.** ● **Compare and contrast the use of finish types.** ● **Compare and contrast the environmental/sustainability impact of each.** ● **Create a drawing representation for each for plan, section/detail view, and elevation.**
10.7.5 Insulation types ● **Fiberglass batt** ● **Extruded Polystyrene (Rigid)** ● **Spray foam** ● **Blown** ○ **Mineral wool** ○ **Cellulose**	● **Identify common insulation types.** ● **Compare and contrast the use of insulation types.** ● **Compare and contrast the environmental/sustainability impact of each.** ● **Create a drawing representation for each in plan, section/detail view, and elevation.**
10.7.6 Wall Section Drawing	● **Identify a wall section drawing.** ● **Explain the purpose(s) of a wall section drawing.** ● **Identify parts of a wall section drawing.** ● **Create a wall section drawing.**

Technical Vocab –

Facade, Sole Plate, Sill Plate, Wall Stud, Opening framing terms, Wall Blocking, Sheathing - OSB, Plywood, Zip system, Vapor barrier, Insulation, Parts of home's exterior (google it, nice images), Cladding/Siding

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.8 - Residential Roofing Systems

Big Idea(s):

- **Roof design has an impact on the overall aesthetics of the building**
- **Roofs can be designed to increase usable or livable space**

Essential Question(s):

- **How is roof design influenced by the building footprint?**
- **How can roofs be designed to increase usable or livable space?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.8.1 Roof Design ● **Factors affecting roof design** ○ **house style** ○ **environmental** ○ **slope/pitch** ○ **proportion/massing** ○ **eave design** ○ **trim** ○ **dormers** ○ **rake design**	● **Identify various factors that affect roof design.** ● **Compare and contrast how each factor influences the aesthetics of the facade.**
10.8.2 Roof Types ● **Gable** ○ Cross Gable ○ Open Gable ○ Box Gable ○ Dutch Gable ● **Gambrel** ● **Shed** ● **Hip** ● **Cross Hip** ● **Mansard** ● **Butterfly** ● **Saltbox** ● **Flat/low pitched** ● Jerkinhead	● **Identify various roof types.** ● **Compare and contrast advantages and disadvantages of various roof designs.** ● **Create a drawing representation for each in plan, section/detail view, and elevation.**
10.8.3 Roof Systems Components ● **Dimensional lumber** ● **Rafters** ● **Collar ties** ● **Eaves** ● **Soffits** ● **Subfascia** ● **Fascia**	● **Identify common components of a roof system.** ● **Explain the function(s) of each component.** ● **Compare and contrast the use of dimensional lumber and Trusses.**

Students will know:	*As evidenced by: (oral, written, or performance)*
● **Gutters and Downspouts** ● **Ice and water underlay** ● **Building paper** ● **Ridge board** ● **Ventilation** ● **Sheathing** ● **Finished material** ● Skylight	● **Create a drawing representation for each in plan, section/detail view, and elevation.**
10.8.4 Roof Materials ● **Tile - clay, slate, concrete** ● **Shingles** ○ **wood shakes** ○ **asphalt** ○ **solar** ● **Metal** ● **Rubber membrane** ● **Green roofs** ● **Fiber cement**	● **Identify common exterior roof finished materials.** ● **Compare and contrast the use of finished material types.** ● **Compare and contrast the environmental impact of each.** ● **Create a drawing representation for each in plan, section/detail view, and elevation.**
10.8.5 Roof Plan Drawing Components ● **Outline of perimeter walls** ● **Outline of additional structural supports** ● **Hips and valleys** ● **Ridges** ● **Chimney** ● Crickets ● Skylights ● **Slope/pitch notation** ● **Notes and Labels** ● **Dimensioning**	● **Identify a roof plan drawing.** ● **Explain the purpose(s) of a roof plan drawing.** ● **Identify parts of a roof plan drawing.** ● **Create a roof plan drawing.**

Technical Vocab –

Aesthetics, Facade, Hips, Valleys, Slope/Pitch, Ridge, Ridge Board, Cricket, Chimney, Dimensional lumber, Engineered lumber, Trusses, Rafters, Collar ties, Eave, Soffit, subfascia, Facia, Gutters and Downspouts, Ice and water underlay, Building paper, Ridge board, Ridge vent, ventilation, Sheathing, Finished material, Skylight, SIP's

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.9 - Architectural Elements

Big Idea(s):

Integration of architectural elements will have a positive impact on your overall project.

Essential Question(s):

- **How can a fireplace/chimney affect the design of a home?**
- **How can Architects use finishes to enhance the aesthetics of a home?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.9.1 Fireplace and Chimney Design	● **Explain the purpose of a fireplace and chimney.** ● **Identify common fuel sources.** ● **Identify common fireplace designs.** ● **Identify and explain the common components of each design.** ● **Identify applicable code requirements.** ● **Compare and contrast the advantages/disadvantages of each fuel source and design.**
10.9.2. Stair Design ● **Types of stair designs** ○ **Straight run** ○ **L-Shaped** ○ **U-Shaped** ○ Winders ○ Spiral ● **Common Components** ○ **Treads and Riser** ○ **Handrails/Guardrails** ○ **Stringer** ○ **Nosing** ● **Code Compliance** ● **Stair calculations**	● **Identify common stair designs.** ● **Compare and contrast the advantages/disadvantages of each stair design.** ● **Identify and explain common components.** ● **Identify applicable code requirements.** ● **Calculate the number of treads/risers and total rise/run.** ● **Create a drawing representation for each type in plan, section/detail view, and elevation.**
10.9.3 Architectural Millwork ● **Type of Millwork** ○ **Molding** ■ **Crown** ■ **Base** ○ **Trim/casing** ○ **Built-ins** ○ **Mantles** ○ **Wainscoting**	● **Identify common elements in a home considered architectural millwork.** ● **Explain the application for each.** ● **Identify common sizes where applicable.** ● **Create a drawing representation for each type in plan, section/detail view, and elevation.**

Students will know:	*As evidenced by: (oral, written, or performance)*
■ 5 common types ■ components	
10.9.4 Doors and Windows ● **Types of** ● **Components of** ● **Common materials** ● **Common sizes** ● **Manufacturers**	● **Identify common types of doors and windows.** ● **Identify and explain common components of doors and windows.** ● **Explain the application for each in various house styles.** ● **Identify common sizes and location of use.** ● **Create a drawing representation for each type in plan, section/detail view, and elevation.**
10.9.5 Dormers ● **Type of design for house style** ● **Proportions** ● **Position/Spacing** ● Roof/Rake/Eave style	● **Explain use(s) for a dormer.** ● **Identify common types of dormers.** ● **Explain proper dormer design** ● **Create a drawing representation for each type in plan, section/detail view, and elevation.**
10.9.6 Decks, Porches, Patios, Balcony	● **Explain the definition and application for each.** ● **Identify common designs for each.** ● **Identify common components for each.** ● **Identify common materials for each.** ● **Identify applicable code requirements.** ● **Create a drawing representation for each type in plan, section/detail view, and elevation.**
10.9.7 Trade-related Math	● **Interpret measurements** ● **Convert inches to feet and feet to inches** ● **Calculate area and perimeter**
10.9.8 Intro to Sustainability	**n/a**

Technical Vocab –

Treads and Riser, Handrails/Guardrails, Stringer, Nosing, Millwork, Molding, Trim/Casing, profile, architectural millwork, casework, doghouse (dormer), deck, porch, patio, balcony

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.10 - Career Readiness and Employability

Big Idea(s):

- **Career Readiness and Employability is of critical importance**
- **Employability skills are just as important, if not more, than technical skills**

Essential Question(s):

- **Why are employer expectations so critical to understand?**
- **What are the essential personal and professional skills needed to be successful in Architecture?**
- **How can employability skills help to increase the likelihood of success?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
10.10.1 Employment Opportunities • **Skills needed** • **Current job trends**	• **Research job opportunities in Architecture** • **List job requirements for entry-level employment in Architecture**

10.10.2 Employment skills
• **Readiness**
• **Organization/Housekeeping**
• **Reliability**
	• **Demonstrate good attendance**
	• **Adhering to shop/office rules**
	• **Demonstrate Professionalism**
	  ○ **Dress code**
	  ○ **Readiness**
	  ○ **Hygiene**

10.10.3 Employment Expectations	• **List employer expectations**

Technical Vocab –

Body language, dress code, employment standards, expectations, interview, preparedness, portfolio, resume

Resources –

Architecture by Kicklighter/Thomas (GW)

Priority Standard 10.11 - Professional Practice in Architecture

Big Idea(s):

- **Professional and technical skills are demonstrated through the process and product of hands-on architectural work**
- **Architectural 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 opportunitie**

Essential Question(s):

- **How do professional behaviors and employability skills impact success in Architecture?**
- **What 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)*
10.11.1 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.**
10.11.2 Technical Skills	● **Apply core architectural standards including:** ○ **Line types** ○ **Line weights** ○ **Drawing organization** ○ **Layout techniques** ● **Demonstrate accuracy, clarity and neatness related to:**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Scale and dimensions** ○ **Visual Communication** ○ **Oral communication** ● **Evaluate quality and completeness of work based on project specifications and industry expectations.** ● **Follow organized and time-efficient processes to complete tasks efficiently and accurately.**
10.11.3 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 –

Architecture- Residential Drafting and Design (GW)

11th Grade Curriculum

Priority Standard 11.1 - Residential Building Codes and Safety

Big Idea(s):

- **Safety is not only important when we construct our home, but also throughout the lifetime of our homes**
- **Training, awareness, planning, and building codes can prevent hazards and injuries**
- **Giving access to all people, regardless of different abilities, creates a better space for all people**

Essential Question(s):

- **Why are all ultimately responsible for a safe construction environment?**
- **Why are there laws about how we can build our homes?**
- **How do we benefit from equitable access to residential spaces?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.1.1 Construction Site Safety (OSHA)	• **Evaluate construction site work areas for potential hazards.** • **Explain the consequences of unsafe working conditions in construction.** • **Describing job site safety policy**
11.1.2 ADA Regulations	• **Explain the purpose of ADA** • **Identify steps to research common residential ADA regulations** • **Incorporate ADA regulations into a residential floor plan**
11.1.3 IBC	• **Explain the purpose of IBC** • **Identify steps to research common residential IBC regulations** • **Incorporate IBC regulations into a residential floor plan**

Technical Vocab –

competent person, extension ladder, fall protection, guard rails, OSHA, PPE, SDS, reasonable accommodation, disability, scope

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.2 - Residential Sustainability/Energy Efficiency

Big Idea (s):

- **The construction industry is responsible for 40% of the carbon emissions that influence climate change**
- **Architects must meet the needs of today without compromising the needs of the future**

Essential Question (s):

- **How does using sustainable concepts in the design of a building change the outcome of the project?**
- **How do we best incorporate sustainable design concepts to create the most benefit to the environment while limiting economic impact?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.2.1 Climate Change ● **History/ Science of Climate Change** ● **Climate Change and the Building Industry**	● **Explain how excess greenhouse gasses contribute to global climate change** ● **Describe how the building industry contributes to global climate change** ● **List the negative consequences of global climate change**
11.2.2 LEED ● **Certification Levels** ○ **Certified** ○ **Silver** ○ **Gold** ○ **Platinum** ● **Categories** ○ **Location and Transportation** ○ **Sustainable Sites** ○ **Water Efficiency** ○ **Energy and Atmosphere** ○ **Materials and Resources** ○ **Indoor Environmental Quality** ○ **Innovation** ○ **Regional Priority**	● **Describe the goals of a LEED project** ● **Compare and Contrast an Integrative Project Approach with a Conventional Project Approach** ● **Identify some common ways to earn LEED points for a project** ● **Evaluate a building utilizing the LEED BD+C Project Checklist**
11.2.3 Alternative Building Rating Systems ● PEER ● WELL ● SITES ● GRESB	● Compare and Contrast alternative building rating systems ● Research examples of projects utilizing alternative building systems

Technical Vocab –

climate change, greenhouse gasses, integrative process, commissioning, brownfield, adaptive reuse, gray water system, Montreal Protocol, refrigerants, optimization, metering, passive solar design, prerequisites, credit categories, volatile organic compounds

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.3 - Electrical Systems

Big Idea(s):

- **Electrical and lighting systems are fundamental in the design and construction of a home**
- **Architects must provide adequate space in their designs to functionally power a home**

Essential Question(s):

- **How does electricity get into a home, and how is it distributed?**
- **How do we competently communicate our design intentions to contractors and subcontractors?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.3.1 Electrical Fundamentals ● **Lighting** ● **Outlets/ Switches** ● **Circuit Breaker** ● **AC/DC Power** ● **Electrical Grid** ● **Alternative Energy Sources** ○ **Solar** ○ Hydro-electric ○ Wind	● **Identify common types of light fixtures** ● **Recognize common outlets types** ● **Articulate how power travels from circuit breaker to outlet/ switch/ light source** ● **Compare and Contrast AC/ DC power** ● **Compare and Contrast energy obtained from the power grid with energy created by a residential solar system**
11.3.2 Lighting Specifications/Math	● **Locate light fixture cut sheets on a manufacturer's website** ● **Specify an appropriate light fixture based on a list of spatial and task related requirements** ● **Calculate the light output of a series of fixtures**
11.3.3 Reflected Ceiling Plan ● **Lighting Symbols** ● **Switch Symbols** ● **Electrical Symbols**	● **Describe the importance of a reflected ceiling plan in a plan set** ● **List and explain common lighting symbols on an RCP** ● **List and explain common switching symbols on an RCP** ● **Draft an RCP/ Electrical Plan for a residence**

Technical Vocab –

reflected ceiling plan, electrical plan, lighting plan, functional lighting, decorative lighting, task lighting, recessed fixture, flush mount fixture, pendant light, duplex, quad, dedicated outlet, circuit breaker, single pole switch, dimmer switch, 3-way switch, photovoltaic, incandescent, LED, AC Power, DC Power

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.4 - Plumbing Systems

Big Idea(s):

- **Plumbing systems are fundamental in the design and construction of a home**
- **Architects must provide adequate plumbing information to ensure the integrity of their designs**

Essential Question(s):

- **How do different types of plumbing fixtures/ equipment change the design of our homes?**
- **How do we competently communicate our design intentions to contractors and subcontractors?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.4.1 Plumbing Fundamentals ● **City Water/Sewers** ● **Well/Septic Tank** ● **Stack Diagram** ● **Residential Water Efficiency** ● **Gray Water System**	● **Explain the fundamentals of a residential plumbing system** ● **Compare and Contrast city water/ sewers with well/ septic tanks** ● **Explain the purpose of a Stack Diagram** ● **Identify common standards for water efficiency**
11.4.2 Plumbing Specifications ● **Sink** ● **Pot Filler** ● **Lavatory** ● **Water Closet** ● **Bidet** ● **Shower** ● **Tub**	● **Identify common plumbing symbols** ● **Identify information on plumbing specification sheets** ● **Create a plumbing schedule for a residence**
11.4.3 Plumbing Layout	● **Draft a kitchen layout utilizing common plumbing symbols and spatial allowances** ● **Draft a bathroom layout utilizing common plumbing symbols and spatial allowances**

Technical Vocab –

lavatory, water closet, shut off valve, supply, waste, gallons per flush, gallons per minute, mixer, faucet, drop in fixture, vessel, undermount, trough, pedestal, vanity, centerset, single hole, widespread, gray water

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.5 – HVAC

Big Idea(s):

- **HVAC systems are fundamental in the design and construction of a home**
- **Architects must provide adequate HVAC information to ensure the integrity of their designs**

Essential Question(s)

- **Why do architects need to know how the HVAC systems work in the homes they design?**
- **How do we competently communicate our design intentions to contractors and subcontractors?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.5.1 HVAC Fundamentals ● **Heating Cycle** ● **Cooling Cycle** ● **Duct Space** ● **Thermostats** ● **Exhaust**	● **Explain the importance of an HVAC system** ● **Identify terminology associated with HVAC systems**
11.5.2 Fuel Types ● **Oil** ● **Natural Gas** ● **Electric**	● **Identify common fuel types for residential heating systems** ● **Compare and contrast fuel types for a residential heating system**
11.5.3 HVAC Appliances and Equipment ● **Ventilation Systems** ○ **Energy Recovery Ventilation** ○ **Heat Recovery Ventilation** ● **Forced Air** ● **Heat Pump** ○ **Air to Air** ○ **Split System** ○ **Geothermal** ● **Hydronic System**	● **Compare and Contrast HVAC systems for residential use** ● **Design adequate mechanical space for a residence** ● **Specify appropriate kitchen/ mechanical appliances based on fuel type**

Technical Vocab –

duct, hot water system, heat pump, zones, thermostat, radiant heat, heat exchange, solar gain, natural ventilation, mechanical ventilation, U-factor, furnace, boiler, Radiant Floor

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.6 - Social Aspects of Architecture

Big Idea(s):

- **The layout of our towns, cities, and structures have been influenced by many factors throughout history**
- **Re-evaluating traditionally held beliefs regarding home and neighborhood design can create better living conditions for our clients and the community**

Essential Question(s):

- **Why do our towns and neighborhoods look the way they do?**
- **Why do people care what their neighbors build?**
- **What are the steps you must take when constructing a home in a particular town or city?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.6.1 Vernacular Neighborhood Evolution ● **Mill Towns/ Company Towns** ● **Developments** ● **Mixed Use Developments** ● **Multi-family Housing** ● Gated Communities ● HOA's ● Mixed Middle Housing	● **Recall the history of American neighborhood evolution from the early 19th century until today** ● **Compare and contrast various types of neighborhoods commonly found in the US** ● **Identify the pros and cons of each type of housing** ● Describe how an HOA works
11.6.2 Permitting Process ● **Planning and Zoning** ● **FAR Calculations** ● **Variances**	● **Explain how the permitting process works** ● **Calculate the Floor Area Ratio of a building on a particular lot.**
11.6.3 Notable Architects	● Recall influential architects of the twentieth and twenty first centuries ● Explain how world events and technologies in the twentieth century impacted the field of architecture ● Recount how various notable architect's theories of design influenced the design of modern America

Technical Vocab –

Mill Town, company town, development, Federal Housing Authority, assembly line construction, covenant, by-laws, Homeowner's Association, Levittown, redlining, mixed use development, multi-family housing, planning and zoning, board of appeals, variance, missing middle housing,

floor area ratio, permit, inspection, building inspector, apartment, condominium, building/ facility manager, New Urbanism, transit-oriented development, NIMBY's

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.7 - Advanced Communication Techniques

Big Idea(s):

- **Building Information Modeling allows designers to view their projects as a complex system rather than a series of individual views and elements**
- **Computer software should be used as tools that allow a designer to fully render their intentions; designers cannot rely on the software to design for them**

Essential Question(s):

- **How can a designer utilize the best aspects of multiple software programs to achieve their desired outcome?**
- **Why is it important to be able to show a client a 3-dimensional image of your design intentions?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.7.1 Building Information Modeling ● **Revit**	● **Explain the importance of Building Information Modeling in the fields of architecture and construction** ● **Compare and contrast BIM with CAD** ● **Identify and locate parts of the interface and splash screen** ● **Draft a basic residence to include the following components:** ○ **Walls** ○ **Doors** ○ **Windows** ○ **Floors** ○ **Ceilings** ○ **Roof** ○ **Millwork** ○ **Appliances/Fixtures** ○ **Furniture** ○ **Dimensions** ○ **Room Labels** ○ **Callouts** ● **Apply standard title blocks to a BIM file** ● **Demonstrate procedure for importing and exporting files** ● **Demonstrate proper procedure for printing**

Students will know:	*As evidenced by: (oral, written, or performance)*
	● **Download specific families from a manufacturer's website into a revit file.**
11.7.2 Advanced Rendering Techniques ● **Entourage** ● **Photoshop** ● Multi-Program Layering ● Enscape	● Explain the importance of an architectural rendering ● Explain the purpose of entourage in an architectural rendering ● List various methods for layering BIM, CAD, and rendering programs ● Create a layered rendering utilizing at least two different techniques and/ or programs

Technical Vocab –

building information modeling, families, central model, work set, view range, parameters, sheet set, object styles, view filters, rendering, layers, masking, entourage, multiply, imports, warnings, type, instance, offset, category

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.8 - Alternative Construction Materials & Techniques

Big Idea(s):

- **Engineered lumber reduces manufacturing waste and improves the strength of wood products**
- **Larger homes and multifamily structures often involve different construction techniques from traditionally built homes**

Essential Question(s):

- **What other materials can a home be built from besides dimensional lumber?**
- **Why might a home need to be framed using alternative construction techniques?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.8.1 Alternative Construction Materials ● **SIP's** ● **ICF's** ● **Trusses** ● **LVL** ● **PSL** ● **OSB** ● **Glulam** ● **I-Joist** ● **Cross Laminated Timber**	● **Identify common types of alternative construction materials** ● **Explain the benefits of using alternative construction materials** ● **Select the appropriate alternative building material for a specific set of project requirements**
11.8.2 Alternative Construction Technique	● Draft a residential floor plan utilizing alternative construction methods ● Select the appropriate framing components for a roof system

Technical Vocab –

SIP's, ICF's, Trusses, LVL, PSL, OSB, Glulam, I-Joist, cellulose, R-value, post-industrial recycled content, post-consumer recycled content, span, span tables

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.9 - Firm Dynamics

Big Idea(s):

- **Architects need to be able to acquire and maintain clients in order to be successful**
- **Architects follow a standard order of operations when working on a project**
- **The path to becoming a registered architect requires a specific process**

Essential Question(s):

- **How does a typical architectural firm operate?**
- **Why is it important to maintain regular communication with your clients?**
- **How does an architect become licensed?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
11.9.1 Client Dynamics	● **Articulate the importance of regular and professional client communication** ● **List appropriate methods of client communication** ● **Create multiple examples of appropriate client communication**
11.9.2 The Business of Architecture ● **Firm Hierarchy** ○ **Principal** ○ **Project Manager** ○ **Designer Architect** ○ **Specification Writer** ● Common Fee Structures ○ Fixed Fee ○ Percentage Fee ○ Time Basis Fee ○ Unit Cost	● **Identify and explain the job descriptions of various roles within an architecture firm** ● Compare and contrast the various common fee structures
11.9.3 The Project Path - 5 Phases of a Project ● **Schematic Design** ● **Design Development** ● **Construction Documents** ● **Bidding** ● **Construction Administration**	● **Recall all phases of an architectural project** ● **Describe each phase of a project and their importance** ● **Create a bid package as a response to an RFP**
11.9.4 Licensure Path	● **Explain how a person can become a licensed architect in the state of Connecticut** ● Describe the licensure path for various fields within the design and construction trades

Technical Vocab –

American Institute of Architects, Schematic, bidding, Request for Proposal, contract, bid documents, specifications, project manager, principal, client, Request for Information, change order, contract, fee structure, project phase, construction administration, billing, Architectural registration exams, accredited program, Architectural Experience Program (AXP) (formerly IDP), National Council of Architectural Registration Boards (NCARB), registered architect

Resources –

Drafting & Design for Architecture by Hepler/Wallach/Hepler (Cengage)

Priority Standard 11.10 - Professional Practice in Architecture

Big Idea(s):

- **Professional and technical skills are demonstrated through the process and product of hands-on architectural work**
- **Architectural 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 in Architecture?**
- **What 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)*
11.10.1 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.**
11.10.2 Technical Skills	● **Apply core architectural standards including:** ○ **Line types** ○ **Line weights** ○ **Drawing organization** ○ **Layout techniques** ● **Demonstrate accuracy, clarity and neatness related to:** ○ **Scale and dimensions**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Visual Communication** ○ **Oral communication** ● **Evaluate quality and completeness of work based on project specifications and industry expectations.** ● **Follow organized and time-efficient processes to complete tasks efficiently and accurately.**
11.10.3 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 –

Architecture- Residential Drafting and Design (GW)

12th Grade Curriculum

Priority Standard 12.1 - Building Codes

Big Idea(s):

- **It is essential for an Architect to be able to read and understand how building codes are applied**
- **Early integration of building codes into the design process benefits the design**

Essential Question(s):

- **What is the purpose of building codes?**
- **Why are there different building codes required for different building types?**
- **How do you read and apply building codes for your design?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.1.1 Applicable Building Codes ● **Purpose of Building Codes** ○ **Health, Safety, Welfare** ● **State Building Code** ● **International Code Council**	● **List the building codes necessary for Architects to reference during all phases of design** ● **Explain the purpose of the building code** ● **Describe methods of obtaining building code information**
12.1.2 Use and Occupancy Classifications ● **Assembly** ● **Business** ● **Education** ● **Factory and Industrial** ● **High Hazard** ● **Institutional** ● **Mercantile** ● **Residential** ● **Storage** ● **Utility and Miscellaneous**	● **List the occupancy classifications** ● **Identify the correct Occupancy classification of a building or design**
12.1.3 Building height and area limitations ● **Mixed-use occupancies**	● **Identify the factors that limit building height and area** ● **Describe how buildings with different occupancy types are classified** ● **Calculate building height and area maximums for a given project**
12.1.4 Types of Construction ● **Type I** ● **Type II** ● **Type III** ● **Type IV**	● **List the types of construction.** ● **Describe the differences of each type of construction** ● **Analyze a project to determine the type of construction**

Students will know:	*As evidenced by: (oral, written, or performance)*
• **Type V**	
12.1.5 Fire and Smoke Protection • **Active vs Passive** • **Fire wall** • **Fire barrier** • **Fire partition** • **Smoke Barrier vs Partition**	• **List the means of fire and smoke protection** • **Describe the characteristics of each means of fire and smoke protection** • **Identify when a fire wall is required over a fire partition**
12.1.6 Means of Egress • **Exit Access** • **Exit** • **Exit Discharge** • **Egress Requirements**	• **List the three components of the means of egress** • **Explain the purpose of each component.**

Technical Vocab –

Health Safety Welfare, Occupancy Group, Building Height, Building Area, Type I, Type II, Type III, Type IV, Type V, Exit, Exit Access, Exit Discharge, Fire Wall, Fire Partition, Smoke Barrier, Active systems, passive systems, Heavy Timber, Mass Timber

Resources –

ICC I-Codes, State of CT Building Code

Priority Standard 12.2 - Accessible Design

Big Idea(s):

Architecture needs to promote inclusivity, equality, and accessibility for individuals with disabilities.

Essential Question(s):

What is the intent of Accessible Design?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.2.1 Regulations ● **2010 ADA standards for Accessible Design** ○ **Scoping Requirements**	● **Discuss the effects the ADA has on design.** ● **Identify common ADA requirements**
12.2.3 Accessible Routes ● **Walking surface** ● **Doors** ● **Ramps** ● **Elevators** ● **Parking lots** ● **Stairs** ● **Handrails**	● **Discuss how the ADA affects the routes architects design within buildings.** ● **Discuss how the ADA standards establish how a person makes their way from their car to the building.**
12.2.5 Plumbing Elements and Facilities ● **Restrooms** ○ **Toilets** ○ **Urinals** ○ **Lavatories** ● Bathing Rooms ○ Tubs ○ Showers	● **Identify the requirements for Restroom layouts.** ● **Use the ADA requirements to layout a restroom.**

Technical Vocab –

Accessible routes, walking surface, doors, ramps, elevators, stairs, handrails, grab bars, toilet compartment, clear floor space, maneuvering clearance.

Resources –

2010 ADA Standards for Accessible Design, Bobrick Planning Guide for Accessible Restrooms

Priority Standard 12.3 - Building Information Modeling for Commercial Architecture

Big Idea(s):

- **BIM promotes collaboration between all stakeholders of a project to improve project efficiency and delivery**
- **BIM enhances the capabilities of architects by providing them with powerful tools for design exploration, collaboration, data analysis, and project management**

Essential Question(s):

- **How can BIM be beneficial over traditional CAD?**
- **What are the best practices for creating a comprehensive and accurate BIM model?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.3.1 Fundamentals of Revit ● **User Interface** ● **New File Setup** ● **Basic modeling** ○ **Walls** ○ **Floors** ○ **Roofs** ○ **Fenestration** ○ **Stairs** ○ **Section cutting** ● **Annotation** ○ **Text** ○ **Dimensions** ○ **Labels** ○ **Symbols** ● **Plotting** ○ **Sheet Layout** ○ **Title Blocks**	● **Create a basic building design incorporating basic modeling fundamentals to include the following schematic design level drawings** ○ **Plans** ○ **Elevations** ○ **Sections** ● **Plot the drawings with utilizing professional drawing standards for commercial construction.**
12.3.2 Advanced Revit Techniques ● **Custom Family Development** ● **Custom Assemblies** ○ **Properties** ○ **Layers** ○ **Materials** ● **Type Properties** ○ **Attributes** ● Model Sharing ○ Central Model set up	● **Create custom assemblies for the following** ○ **Roof** ○ **Exterior Wall** ○ **Floor** ● **Create a custom Family**
12.3.3 Advanced Modeling ● **Conceptual Massing**	● **Create and detail a wall section drawing using the following**

Students will know:	*As evidenced by: (oral, written, or performance)*
○ Phasing ● **Drafting Views** ● **Detailing** ○ **Cut Profile** ○ **Detail Lines** ○ **Patterns** ○ **Visibility Graphics** ● **Massing in Place**	○ **Cut Profile** ○ **Detail lines** ○ **Patterns** ○ **Visibility Graphics** ● **Create a custom element using massing in place**
12.3.4 Rendering and Presentation ● **Materials** ○ **Material Browser** ● **Rendering properties** ● Fly throughs	● **Edit or create new materials to be used in rendering** ● **Create a rendering for presentation**

Technical Vocab –

Walls, floors, roofs, fenestration, stairs, section cutting tool, annotation, text, dimensions, labels, symbols, sheet layout, title blocks, family, properties, assembly layers, materials, type properties, Central Model, Massing, drafting views, cut profile, Detail Lines, Patterns, Visibility Graphics, Massing in Place, Material properties, rendering properties.

Resources –

Commercial Drafting and Detailing by Jefferis/Smith (Cengage)

Priority Standard 12.4 - Site Analysis and Design for Commercial Construction

Big Idea(s):

Site analysis is an assessment of a potential construction site to determine its suitability for the intended development.

Essential Question(s):

- **How do zoning regulations affect side development?**
- **What goes into a successful site analysis and design?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.4.1 Zoning Regulations ● **Purpose of Zoning** ● **Districts** ○ **Allowed Uses** ● **Bulk Requirements** ○ **Setbacks** ○ **Height** ○ **Coverage**	● **Identify common zoning requirements** ● **Locate town/city zoning requirements** ● **Use town/city zoning regulations to complete zoning analysis of a site providing the setbacks, maximum height and maximum coverage.**
12.4.2 Site Analysis ● **Solar Orientation** ● **Wind** ● **Flora and Fauna** ● **Topography** ● **Water/wetlands**	● **Identify common steps to a site analysis** ● **Complete an analysis of the existing site to determine the best location for a building that has the least impact on the existing site and promotes passive sustainable design.**
12.4.3 Site Design ● **Topography alteration** ○ **Cut and Fill** ○ **Grading** ● **Hardscapes** ○ **Parking lots** ○ **Walkways** ○ **Pervious/impervious** ● **Vegetation** ○ **Native Species** ○ **Invasive species** ● **Stormwater management**	● **Successfully complete a cut and fill exercise to create a flat buildable area on a sloped site.** ● **Create a parking lot layout for a small commercial building** ● **List means of stormwater management** ● **Describe the benefits of using native species for vegetation on a site.**
12.4.4 Surveying ● Angles, areas and distance	● Discuss the importance of surveys in the construction industry

Students will know:	*As evidenced by: (oral, written, or performance)*
● Elevations ● Survey types ○ Boundary Survey ○ Existing Survey ○ As-built survey ○ A2 Survey	● List the types of surveys used in construction

Technical Vocab –

Zoning district, allowed uses, bulk requirements, set back, coverage, height, solar orientation, wind, flora, fauna, topography, wetlands, cut and fill, grading, hardscapes, pervious, impervious, native species, invasive species, stormwater management, Boundary Survey, Existing Survey, As built survey, A2 Survey, elevation, angles, areas, distance

Resources –

Commercial Drafting and Detailing by Jefferis/Smith (Cengage)

Priority Standard 12.5 - Commercial Construction Materials and Assemblies

Big Idea(s):

Materials and assemblies are designed to meet specific performance requirements, building codes, and industry standards while providing durability, functionality, and aesthetics.

Essential Question(s):

How does commercial construction differ from residential construction?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.5.1 Assembly Basics ● **Control Layers** ○ **Water** ○ **Air** ○ **Thermal** ○ **Vapor** ● **Curtain Walls** ● **Fenestration**	● **Identify and describe the function of each control layer** ● **Describe the function of a curtain wall and how it differs from a load bearing wall**
12.5.2 Steel Construction ● **Structural Steel framing** ● **Open web truss**	● **Identify the types and components of steel construction** ● **Identify the pros and cons of the different steel construction types** ● **Discuss the effects of steel construction on design.** ● Design a steel frame structure
12.5.3 Concrete Construction ● **Cast-in-place** ● **Pre-Cast** ● **Pre-stressed**	● **List the components of concrete construction** ● **Identify the pros and cons of concrete construction** ● **Discuss the effects of concrete construction on design** ● Design a concrete structure
12.5.4 Masonry Construction ● **CMU** ● **Brick**	● **Identify or list the components of masonry construction** ● **Identify the pros and cons of masonry construction** ● **Discuss the effects of masonry construction on design.** ● Design a masonry structure
12.5.5 Heavy Timber / Mass Timber (HT/MT)	● **Identify or list the components of**

Students will know:	*As evidenced by: (oral, written, or performance)*
Construction ● **Heavy Timber** ● **Glu-Lam** ● **Cross laminated timber** ● **Dowel laminated timber**	**heavy timber/mass timber construction** ● **Identify the pros and cons of HT/MT construction** ● **Discuss the effects of HT/MT construction on design.** ● Design a HT/MT structure
12.5.6 MEP ● **HVAC Systems** ● **Electrical Systems** ● **Plumbing**	● **Identify the means of heating and cooling a building** ● **Apply rule of thumbs for sizing mechanical rooms** ● **Describe how stacking restrooms in multi-level buildings increases design efficiency**
12.5.7 Acoustics and Lighting ● Acoustics ○ Reverberation ○ Sound Absorption ○ Sound Isolation ○ Diffusion ● Lighting ○ Natural vs Artificial ○ Lighting levels ○ Lighting controls	● Discuss the importance of acoustics and lighting in buildings ● List methods of acoustic treatments for various building types and needs ● List methods of lighting for different tasks within a building

Technical vocab –

Control Layers, curtain walls, fenestration, steel framing, open web truss, structural steel shapes, wide flange beam, castellated beam, cast in place, pre-cast, pre-stressed, CMU, Brick, cavity wall, Heavy timber, Glu-Lam, Cross laminated Timber, Dowel laminated Timber, HVAC systems, Variable Air Volume, Boiler, Air handler, Chiller, Vent Stack, Riser diagrams, reverberation, sound absorption, sound isolation, diffusion, natural light, artificial light, lighting levels, lighting controls.

Resources –

Commercial Drafting and Detailing by Jefferis/Smith (Cengage)

Priority Standard 12.6 - Commercial Energy Efficiency

Big Idea(s):

Architects have a significant role in reducing energy needs for the built environment.

Essential Question(s):

- **Why do buildings need to be energy efficient?**
- **How does climate and location affect how a structure is insulated?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.6.1 Minimum Requirements ● **International Energy Conservation Code (IECC)** ● **General Requirements** ● **Commercial Energy Efficiency** ● **R-value vs U-value** ● **Solar heat gain coefficient**	● **Determine what climate zone a site is in for applying the IECC to.** ● **Apply the IECC requirements to a design**
12.6.2 Fundamentals of Sustainability • **Location & Transportation** • **Sustainable Site** • **Water Efficiency** • **Energy & Atmosphere** • **Materials & Resources** • **Indoor Environmental Quality** • **Carbon Sequestration**	● **Describe core principles and how they affect the architecture** ● **Utilize the core principles in design process to add sustainability to a project**
12.6.3 Beyond Code ● **Passive House** ● **Net Zero**	● **Describe each one and how the differ from the IECC** ● Utilize in design process of a project

Technical vocab –

IECC, R-value, U-value, Heat Gain coefficient, location, transportation, sustainable site, water efficiency, energy and atmosphere, materials and resources indoor environmental quality, carbon sequestration, Passive House, Net Zero,

Resources –

Commercial Drafting and Detailing by Jefferis/Smith (Cengage)

Priority Standard 12.7 - Construction Documentation

Big Idea(s):

- **Construction Documentation is the culmination of the design phase**
- **A clear and concise construction document is crucial for pricing and constructing the building**

Essential Question(s):

How are Construction Documents utilized in the field?

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.7.1 General Information • **Cover Sheet** • **Specifications** • **Project manual** • Code Sheet	• **Identify components of the cover sheet** • **List the Masterformat Specification divisions**
12.7.2 Civil and Landscape Drawings • **Survey** • **Site Demo & Prep Plan** • **Erosion Control Plan** • **Site Layout Plan** • **Site Utility Plan** • **Landscaping Plan** • **Details**	• **Identify the different drawings site drawings that are required for commercial design** • **Read and interpret the information on a Civil drawings**
12.7.3 Structural • **Foundation Plan** • **Framing Plan(s)** • **Structural Details**	• **Identify the different types of structural drawings** • **Read and interpret the information on a structural drawing**
12.7.4 Architectural • **Floor Plans** • **Elevations** • **Building Sections** • **Wall Sections** • **Details** • **Interior Elevations** • **Schedules**	• **Identify the different types of architectural drawings** • **Read and interpret the information on an architectural drawing** • **Developing architectural drawings to industry standards.**
12.7.5 MEP • **Mechanical** • **Electrical** • **Plumbing** • **Fire protection**	• **Identify the different types of MEP drawings** • **Read and interpret the information on an MEP** • **Developing MEP drawings to industry**

Students will know:	*As evidenced by: (oral, written, or performance)*
	standards.

Technical Vocab –

Cover sheet, Specifications, code sheet, survey, demo plans, site drawings, Foundation plan, framing plan, structural details, floor plans, elevations, sections, wall sections, details, interior elevations, schedules, mechanical plans, electrical plans, reflected ceiling plans, plumbing plans fire protection plans.

Resources –

Commercial Drafting and Detailing by Jefferis/Smith (Cengage)

Priority Standard 12.8 - Architecture Portfolio

Big Idea(s):

Professionalism is a fundamental aspect of an architect's practice, ensuring trust, success, safety, and the ability to make a positive difference in the world through design.

Essential Question(s):

- **Why is it important for architects to exude a professional demeanor?**
- **What are some effective strategies for marketing and promoting architectural services, especially for emerging professionals?**

Learning Outcomes

Students will know:	*As evidenced by: (oral, written, or performance)*
12.8.1 Architectural Portfolio ● **Adobe Creative Suite** ○ **Indesign** ● **Binding methods**	● **Design and print a professional portfolio of original work**
12.8.2 Employment Fundamentals ● **Cover Letter** ● **Resume** ● **Examples of work** ● **Interview Techniques**	● **Create a professional resume** ● **Take part in a mock-interview utilizing the portfolio**
12.8.3 Professional Conduct ● **Behavior** ● **Dress**	● **Describe and incorporate professional behavior into their everyday demeanor** ● **Incorporate a professional dress into everyday practice**
12.8.4 Marketing ● **Social Media Presence** ● **Networking** ● **Website**	● **Create a business card with contact information to handout at networking events**
12.8.5 Project Management ● **Client Relations** ○ **Role of the architect** ● **Construction Administration** ○ **Site visits** ○ **Construction Sketches** ○ **Shop Drawings** ● Contracts ○ A102 General conditions ○ B105 Standard form of Agreement	● **Describe how the role of the Architect changes throughout the design phases and construction.** ● **Explain what a site visit is and what an architect is responsible for when on the job site**

Students will know:	*As evidenced by: (oral, written, or performance)*
12.8.6 Safety ● **OSHA** ● **Architects and job site safety**	● **Discuss the role of the architect and job site safety**
12.8.7 Professional Affiliations ● **American Institute of Architects** ○ **American Institute of Architecture students** ● **National Council of Architectural Registration Boards (NCARB)** ● **American Society of Interior Designers** ● **American Society of Landscape Architects**	● **Identify common professional affiliations in Architecture** ● **Discuss the importance of each Professional organization and their role in the field of architecture.**

Technical Vocab –

Portfolio, Cover Letter, resume, professional conduct, marketing, social media awareness, networking, website, AIA, AIAS, NCARB, ASID, ASLA

Resources –

Commercial Drafting and Detailing by Jefferis/Smith (Cengage)

Priority Standard 12.9 - Professional Practice in Architecture

Big Idea(s):

- **Professional and technical skills are demonstrated through the process and product of hands-on architectural work**
- **Architectural 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 in Architecture?**
- **What 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)*
12.9.1 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.**
12.9.2 Technical Skills	● **Apply core architectural standards including:** ○ **Line types** ○ **Line weights** ○ **Drawing organization** ○ **Layout techniques** ● **Demonstrate accuracy, clarity and neatness related to:** ○ **Scale and dimensions**

Students will know:	*As evidenced by: (oral, written, or performance)*
	○ **Visual Communication** ○ **Oral communication** ● **Evaluate quality and completeness of work based on project specifications and industry expectations.** ● **Follow organized and time-efficient processes to complete tasks efficiently and accurately.**
12.9.3 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 –

Architecture- Residential Drafting and Design (GW)