

Construction Trades I

Course Description

This first sequence course for the Architecture and Construction Trades builds a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of architecture and construction careers and cluster foundation knowledge and skills including basic safety, plan reading, use of tools and equipment and basic rigging as well as how to employ positive work ethics in their careers. Concepts of Construction are introduced including Floor Systems, Wall Systems, Roof Systems and Structure Enclosure but are developed in subsequent sequences. This course provides a prerequisite for the next level. Students will be able to build small projects such as jewelry box, wall shelves, small cabinets, tables and toolboxes

Construction Trades I

Pacing Guide		
Unit	Topic	Suggested Timing
Unit 1	Workshop/ Workplace Safety	approx. 3 weeks
Unit 2	Construction materials	approx. 7 weeks
Unit 3	Hand tools	approx. 15 weeks
Unit 4	Power tools	approx. 10 weeks

Educational Technology Standards

8.1.12.A.1, 8.1.12.B.2, 8.1.12.C.1, 8.1.12.D.1, 8.1.12.E.1, 8.1.12.F.1

- **Technology Operations and Concepts**
 - Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
- **Creativity and Innovation**
 - Apply previous content knowledge by creating and piloting a digital learning game or tutorial.
- **Communication and Collaboration**
 - Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.
- **Digital Citizenship**
 - Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.
- **Research and Information Literacy**
 - Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.
- **Critical Thinking, Problem Solving, Decision Making**
 - Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

CRP1. Act as a responsible and contributing citizen and employee

Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

CRP2. Apply appropriate academic and technical skills.

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

CRP3. Attend to personal health and financial well-being.

Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities. Career-ready individuals also take regular action to contribute to their personal financial well-being, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.

CRP4. Communicate clearly and effectively and with reason.

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP5. Consider the environmental, social and economic impacts of decisions.

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.

CRP6. Demonstrate creativity and innovation.

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP7. Employ valid and reliable research strategies.

Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

CRP9. Model integrity, ethical leadership and effective management.

Career-ready individuals consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.

CRP10. Plan education and career paths aligned to personal goals.

Career-ready individuals take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

CRP11. Use technology to enhance productivity.

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

CRP12. Work productively in teams while using cultural global competence.

Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Differentiated Instruction

Strategies to Accommodate Students Based on Individual Needs

<u>Time/General</u>	<u>Processing</u>	<u>Comprehension</u>	<u>Recall</u>
<ul style="list-style-type: none"> • Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates for reports and projects • Communication system between home and school • Provide lecture notes/outline 	<ul style="list-style-type: none"> • Extra Response time • Have students verbalize steps • Repeat, clarify or reword directions • Mini-breaks between tasks • Provide a warning for transitions • Reading partners 	<ul style="list-style-type: none"> • Precise step-by-step directions • Short manageable tasks • Brief and concrete directions • Provide immediate feedback • Small group instruction • Emphasize multi-sensory learning 	<ul style="list-style-type: none"> • Teacher-made checklist • Use visual graphic organizers • Reference resources to promote independence • Visual and verbal reminders • Graphic organizers
<u>Assistive Technology</u>	<u>Tests/Quizzes/Grading</u>	<u>Behavior/Attention</u>	<u>Organization</u>
<ul style="list-style-type: none"> • Computer/whiteboard • Tape recorder • Spell-checker • Audio-taped books 	<ul style="list-style-type: none"> • Extended time • Study guides • Shortened tests • Read directions aloud 	<ul style="list-style-type: none"> • Consistent daily structured routine • Simple and clear classroom rules • Frequent feedback 	<ul style="list-style-type: none"> • Individual daily planner • Display a written agenda • Note-taking assistance • Color code materials

Enrichment

Strategies Used to Accommodate Based on Students Individual Needs:

- Adaption of Material and Requirements
- Evaluate Vocabulary
- Elevated Text Complexity
- Additional Projects
- Independent Student Options
- Projects completed individual or with Partners
- Self Selection of Research
- Tiered/Multilevel Activities
- Learning Centers
- Individual Response Board
- Independent Book Studies
- Open-ended activities
- Community/Subject expert mentorships

Assessments

Suggested Formative/Summative Classroom Assessments

- Timelines, Maps, Charts, Graphic Organizers
- Teacher-created Unit Assessments, Chapter Assessments, Quizzes
- Teacher-created DBQs, Essays, Short Answer
- Accountable Talk, Debate, Oral Report, Role Playing, Think Pair, and Share
- Projects, Portfolio, Presentations, Prezi, Gallery Walks
- Homework
- Concept Mapping
- Primary and Secondary Source analysis
- Photo, Video, Political Cartoon, Radio, Song Analysis
- Create an Original Song, Film, or Poem
- Glogster to make Electronic Posters
- Tumblr to create a Blog

Interdisciplinary Connections

English Language Arts

- Journal writing
- Close reading of industry-related content
- Create a brochure for a specific industry
- Keep a running word wall of industry vocabulary

Social Studies

- Research the history of a given industry/profession
- Research prominent historical individuals in a given industry/profession
- Use historical references to solve problems

World Language

- Translate industry-content
- Create a translated index of industry vocabulary
- Generate a translated list of words and phrases related to workplace safety

Math

- Research industry salaries for a geographic area and juxtapose against local cost of living
- Go on a geometry scavenger hunt
- Track and track various data, such as industry's impact on the GDP, career opportunities or among of individuals currently occupying careers

Fine & Performing Arts

- Create a poster recruiting young people to focus their studies on a specific career or industry
- Design a flag or logo to represent a given career field

Science

- Research the environmental impact of a given career or industry
- Research latest developments in industry technology
- Investigate applicable-careers in STEM fields

New Jersey Student Learning Standards

9.3– Career and Technical Education

Career Cluster: Architecture and Construction (AC)

- 9.3.12.AC.1: Use vocabulary, symbols and formulas common to architecture and construction.
- 9.3.12.AC.2: Use architecture and construction skills to create and manage a project .
- 9.3.12.AC.3: Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
- 9.3.12.AC.4: Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and c
construction in society and the economy.
- 9.3.12.AC.5: Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions,
including labor/management relationships.
- 9.3.12.AC.6: Read, interpret and use technical drawings, documents and specifications to plan a project
- 9.3.12.AC.7: Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career
Pathways.

Pathway: Construction (AC-CST)

- 9.3.12.AC-CST.1: Describe contractual relationships between all parties involved in the building process.
- 9.3.12. AC-CST.2: Describe the approval procedures required for successful completion of a construction project
- 9.3.12. AC-CST.3: Implement testing and inspection procedures to ensure successful completion of a construction project
- 9.3.12. AC-CST.4: Apply scheduling practices to ensure the successful completion of a construction project.
- 9.3.12. AC-CST.5: Apply practices and procedures required to maintain jobsite safety.
- 9.3.12. AC-CST.6: Manage relationships with internal and external parties to successfully complete construction projects.
- 9.3.12. AC-CST.7: Compare and contrast the building systems and components required for a construction project.
- 9.3.12. AC-CST.8: Demonstrate the construction crafts required for each phase of a construction project.
- 9.3.12. AC-CST.9: Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project
goals.

Pathway: Design/Pre-Construction (AC-DES)

- 9.3.12.AC-DES.1 Justify design solutions through the use of research documentation and analysis of data.
- 9.3.12.ACDEDES.2 Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
- 9.3.12.AC-DES.3 Describe the requirements of the integral systems that impact the design of buildings.
- 9.3.12.AC-DES.4 Apply building codes, laws and rules in the project design.
- 9.3.12.ACDES.5 Identify the diversity of needs, values and social patterns in project design, including accessibility standards.
- 9.3.12.AC-DES.6 Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
- 9.3.12.AC-DES.7 Employ appropriate representational media to communicate concepts and project design.
- 9.3.12.ACDES.8 Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.

Pathway: Maintenance/Operations (AC-MO)

- 9.3.12.AC-MO.1 Recognize and employ universal construction signs and symbols to function safely in the workplace.
- 9.3.12.AC-MO.2 Use troubleshooting procedures when solving a maintenance problem in buildings.
- 9.3.12.AC-MO.3 Apply construction skills when repairing, restoring or renovating existing buildings.
- 9.3.12.AC-MO.4 Determine work required to repair or renovate an existing building.
- 9.3.12.AC-MO.5 Plan and practice preventative maintenance activities to service existing buildings.
- 9.3.12.AC-MO.6 Maintain and inspect building systems to achieve safe and efficient operation of buildings

Common Career Technical Core (CCTC)

Architecture and Construction Career Cluster (AC)

AC 1. Use vocabulary, symbols and formulas common to architecture and construction.

AC 2. Use architecture and construction skills to create and manage a project.

AC 3. Comply with regulations and applicable codes to establish and manage a legal and safe workplace.

AC 4. Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.

AC 5. Describe the roles, responsibilities and relationships found in the architecture and construction trades and professions, including labor/management relationships.

AC 6. Read, interpret and use technical drawings, documents and specifications to plan a project.

AC 7. Describe career opportunities and means to achieve those opportunities in each of the Architecture and Construction career pathways.

Construction Career Pathway (AC-CST)

AC-CST 1. Describe contractual relationships between all parties involved in the building process.

AC-CST 2. Describe the approval procedures required for successful completion of a construction project.

AC-CST 3. Implement testing and inspection procedures to ensure successful completion of a construction project.

AC-CST 4. Apply scheduling practices to ensure the successful completion of a construction project.

AC-CST 5. Apply practices and procedures required to maintain jobsite safety.

AC-CST 6. Manage relationships with internal and external parties to successfully complete construction projects.

AC-CST 7. Compare and contrast the building systems and components required for a construction project.

AC-CST 8. Demonstrate the construction crafts required for each phase of a construction project.

AC-CST 9. Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.

Design/Pre-construction Career Pathway (AC-DES)

AC-DES.1. Justify design solutions through the use of research documentation and analysis of data. AC-DES.2. Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.

AC-DES.3. Describe the requirements of the integral systems that impact the design of buildings.

AC-DES.4. Apply building codes, laws and rules in the project design.

AC-DES.5. Identify the diversity of needs, values and social patterns in project design, including accessibility standards.

AC-DES.6. Apply the techniques and skills of modern drafting, design, engineering and construction to projects.

AC-DES.7. Employ appropriate representational media to communicate concepts and project design.

AC-DES.8. Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.

Maintenance/Operations Career Pathway (AC-MO)

AC-MO. 1. Recognize and employ universal construction signs and symbols to function safely in the workplace.

AC-MO. 2. Use troubleshooting procedures when solving a maintenance problem in buildings.

AC-MO. 3. Apply construction skills when repairing, restoring or renovating existing buildings.

AC-MO. 4. Determine work required to repair or renovate an existing building.

AC-MO. 5. Plan and practice preventative maintenance activities to service existing buildings.

AC-MO. 6. Maintain and inspect building systems to achieve safe and efficient operation of buildings.

Common Core State Standards (CCSS)

CCSS - English-Language Arts

Key Ideas and Details:

- CCSS.ELA-LITERACY.RST.11-12.1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
- CCSS.ELA-LITERACY.RST.11-12.2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- CCSS.ELA-LITERACY.RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure:

- CCSS.ELA-LITERACY.RST.11-12.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
- CCSS.ELA-LITERACY.RST.11-12.5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
- CCSS.ELA-LITERACY.RST.11-12.6. Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integration of Knowledge and Ideas:

- CCSS.ELA-LITERACY.RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- CCSS.ELA-LITERACY.RST.11-12.8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- CCSS.ELA-LITERACY.RST.11-12.9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

- CCSS.ELA-LITERACY.RST.11-12.10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently

Research to Build and Present Knowledge:

- CCSS.ELA-LITERACY.W.11-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Range of Writing:

- CCSS.ELA-LITERACY.W.11-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences

NJSLS: MATHEMATICS

Number and Quantity

N.Q.A.1. Use units as a way to understand problems and to guide the solution of multi-step problems; Choose and interpret units consistently in formulas; Choose and interpret the scale and the origin in graphs and data displays.

N.Q.A.2. Define appropriate quantities for the purpose of descriptive modeling.

N.Q.A.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

<p>Course: Construction I</p> <p>Unit: 2 – Construction Materials- Wood.</p> <p>Grade Level: 9-12</p>	<p>Unit Overview: This unit provides knowledge about the properties and science of wood used in the Construction Industry.</p> <p>Lumber and concrete are the basis of the construction industry. As such, the nature of lumber and its commercial availability in specific dimensions, the nature and properties of concrete are of prime importance to this trade.</p> <p>The conservation and sustenance of the lumber industry is an important part of the ecological process.</p>
<p>New Jersey Student Learning Standards (NJSLS): 9.3.12.AC 1; 9.3.12.AC-CST. 1,7; 9.3.12.AC-DES 1, 9.3.12.AC-MO 3;</p>	
<p>Common Career Technical Core (CCTC): AC1, AC-CST 1,7; AC-DES 1, AC-MO 3.</p>	
<p>Common Core State Standards (CCSS): ELA-LITERACY.RST.11-12.1; ELA-LITERACY.RST.11-12.2RL.9-10.1; CCSS.ELA-LITERACY.RST.11-12.3; ELA-LITERACY.RST.11-12.10; ELA-LITERACY.W.11-12.10;</p>	
<p>Math Standards: N.Q.A.1-3.</p>	

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>2.1. Explain the science and properties of wood used in the building industry.</p> <p>NJSLS: 9.3.12.AC1, 9.3.12.AC-CST 7, 9.3.12.AC-DES.1. 9.3.12.AC-MO.3.</p> <p>CCTC: AC 1, AC-CST 7, AC-DES 1; AC-MO. 3.</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1 MATH: N.Q.A.1-3.</p>	<p>Is wood suitable for this building structure?</p> <p>How to select the suitability of the type of wood is for this job?</p>	<p>Differentiating between different types of wood.</p> <p>Selecting a specific type of wood for a specific purpose.</p>	<p>Online Identify among pine, oak, cedar and other types of wood.</p> <p>Match wood properties to their application in the building industry.</p> <p>Research “lumber harvesting”</p> <p>Workshop Identify the various types of wood from the samples provided.</p>	<p>Workshop Samples of various types of wood.</p> <p>Online Types of wood; https://www.youtube.com/watch?v=SDF5_1KjWzE https://www.youtube.com/watch?v=ajvGUILrNw8</p> <p>Library Nature and properties of wood. “Carpentry” by Leonard Koel.</p> <p>Site visit: Local hardware such as Lowes/ Home Depot</p>
<p>2.2. Explain how lumber is manufactured, and made commercially available.</p> <p>NJSLS:</p>	<p>How to get lumber from trees?</p> <p>What is treated lumber?</p>	<p>Explaining sawmill operations.</p> <p>Identifying types of sawing methods.</p>	<p>Online Research how trees are grown, harvested for lumber. Research the sawmill</p>	<p>Workshop Samples of various types of wood.</p> <p>Library</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>9.3.12.AC1, 9.3.12.AC-CST 7, 9.3.12.AC-DES.1. 9.3.12.AC-MO.3.</p> <p>CCTC: AC 1, AC-CST 7, AC-DES 1; AC-MO. 3.</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</p> <p>MATH: N.Q.A.1-3.</p>		<p>Explaining seasoning methods.</p> <p>Analyzing planning and grading of lumber.</p> <p>Identifying lumber defects.</p> <p>Identifying size, shape and dimension of commercial lumber</p>	<p>operation.</p> <p>Site visit Visit workshop storeroom/local hardware to view various types of lumber.</p> <p>Identify some common defects in lumber.</p> <p>Select various dimensions of some samples of lumber in the workshop/local hardware.</p>	<p>Nature and properties of wood. “Carpentry” by Leonard Koel.</p> <p>Site visit: Local hardware such as Lowes/ home depot</p> <p>Online Wood harvesting. https://www.youtube.com/watch?v=HZNnEZxxmG0</p>
<p>2.3. Differentiate among soft and hard wood, and engineered wood.</p> <p>NJSLS: 9.3.12.AC1, 9.3.12.AC-CST 7, 9.3.12.AC-DES.1. 9.3.12.AC-MO.3.</p>	<p>Which type of wood is suitable for structure vs. cabinets?</p> <p>What is engineered wood?</p>	<p>Selecting soft and hard wood.</p> <p>Identifying engineered wood.</p>	<p>Online Research the properties of soft and hard wood.</p> <p>Workshop Identify soft and hard wood from some samples in the workshop.</p>	<p>Workshop; Samples soft and hard wood, engineered wood.</p> <p>Library Types of wood. “Carpentry” by Leonard Koel.</p> <p>Online</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>CCTC: AC 1, AC-CST 7, AC-DES 1; AC-MO. 3.</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</p> <p>MATH: N.Q.A.1-3.</p>			<p>Identify engineered wood.</p>	<p>https://www.youtube.com/watch?v=-REVw7qjSoQ.</p> <p>Site visit: Local hardware such as Lowes/ Home Depot</p>
<p>2.4 Examine the science of wood treatment.</p> <p>NJSLS: 9.3.12.AC1, 9.3.12.AC-CST 7, 9.3.12.AC-DES.1. 9.3.12.AC-MO.3.</p> <p>CCTC: AC 1, AC-CST 7, AC-DES 1; AC-MO. 3.</p>	<p>What are the causes of wood deterioration?</p> <p>Why is there a need to apply wood treatment to wood?</p>	<p>Selecting and applying the correct type of wood treatment.</p>	<p>Online Research the various types of wood treatment –“wood treatment”.</p> <p>Site visit local hardware and list at least 2 types of wood treatment products.</p> <p>Workshop Identify treated lumber from untreated ones.</p>	<p>Workshop; Samples of treated and untreated wood.</p> <p>Library Wood Protection. “Carpentry” by Leonard Koel.</p> <p>Online How to treat wood: https://www.youtube.com/watch?v=SvXCy_zR_OQ</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1</p>				<p>Site visit: Local hardware such as Lowes/ Home Depot</p>
<p>2.5. Explain the properties and science of concrete used in the building industry.</p> <p>NJSLS: 9.3.12.AC1, 9.3.12.AC-CST 7, 9.3.12.AC-DES.1. 9.3.12.AC-MO.3.</p> <p>CCTC: AC 1, AC-CST 7, AC-DES 1; AC-MO. 3.</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1.</p> <p>MATH: N.Q.A.1-3.</p>	<p>What is Portland cement?</p> <p>How is cement manufactured?</p>	<p>Selecting proportions of materials for concrete, mortar mixture.</p> <p>Explaining the science of concrete/mortar.</p>	<p>Workshop Mix some concrete/mortar and observe the time it takes to set. Perform simple test for hardness of concrete/mortar.</p>	<p>Workshop Materials</p> <p>Library Research Nature and properties of wood. “Carpentry” by Leonard Koel.</p> <p>Online YouTube “manufacture of cement”.</p>

Student Learning Objectives (SLOs)	Essential Questions	Skills & Indicators	Sample Activities	Resources
<p>2.6. Select correct types of hardware-hinges, hasps, corner brackets,</p> <p>NJSLS: 9.3.12.AC1, 9.3.12.AC-CST 7, 9.3.12.AC-DES.1. 9.3.12.AC-MO.3.</p> <p>CCTC: AC 1, AC-CST 7, AC-DES 1; AC-MO. 3.</p> <p>CCSS: RL.9-10.1; RI.9-10.5; SL.9-10.1.</p> <p>MATH: N.Q.A.1-3.</p>	<p>Which hardware to use?</p> <p>Why are hardware important to building industry?</p>	<p>Identifying various types of hardware for various types of installation.</p> <p>Selecting the proper tools to install hardware.</p>	<p>Workshop Identifying hardware from samples. Demonstrating how to select and install hardware.</p>	<p>Workshop “Carpentry” by Leonard Koel.</p> <p>Site visit: Local hardware such as Lowes/ Home Depot</p> <p>Online Variety of Construction hardware: https://www.youtube.com/watch?v=Pz0y2BDFDuY</p>

Vocabulary

Aggregates

Sand and gravel in a concrete mixture.

Architect

Person qualified and licensed to design and oversee construction of a building.

Barricade

Structure set up around a construction job to prevent unauthorized persons from entering working areas. Covered barricades also protect the public from falling objects.

Drywall frame

Brace placed in a framed wall to increase lateral strength.

Expansion Joint

Expansion joints allow for expansion of a slab due to temperature changes.

Façade

Exterior of the front of a building.

Floor plans

Drawings in a set of blueprints that give a plan view of each floor of the building.

Flush door

Door with a flat surface made of a frame covered with plywood or hardboard face panels.

Foundation	The part of a building that rests on and extends into the ground, it provides support fro the structural loads above.
Footing	Base of a foundation system. It bears directly on the soil.
General contractor	Licensed individual or firm that can enter into legal contracts to do construction work, and is in charge of the overall organization and supervision of a construction project.
Gutter	Wood or metal trough attached to the eaves to receive water runoff from the roof.
Hollow-core door	Lightweight, less expensive type of flush door.
Interior finish	In carpentry, the application of finish wall covering, molding, cabinets and interior door jambs. Also included are the hanging of doors and installation of finish hardware.
Joint	The place where two pieces of material meet or are joined together.
Joist	Horizontal plank placed on edge to which subfloor and ceiling materials are nailed.
Journeyman	Worker who has completed an apprenticeship training course and passed certification requirements for working in the trades. Metal or plastic plate mounted at the bottom of a door face to prevent damage from foot pressure against the door.
Masonry	Molded or shaped construction materials such as concrete blocks ,bricks, stones, and tiles.

Millwright	Person who installs machinery and other mechanical equipment in mills and factories.
Partition	Interior wall.
plank	Lumber over 1” thick and 6” or more in width.
Plywood	Product made of wood layers glued and pressed together under high heat and pressure.
site	In construction work, the location of a construction project.
Yard lumber	All lumber sold for structural building purposes.
Zoning regulation.	Local regulations that govern the type of buildings and structures that may be erected in different areas of a community. Most zones come under the general categories of residential, commercial, and manufacturing.

Suggested Unit Projects

Choose At Least One

Apply all your knowledge and tools skills to:

- Design and construct a tool box.
- Design and construct a dog house.
- Design and construct a bird house.
- Design and construct an object of your choice but must be approved by the teacher.

If working in groups, each student must be assigned at least one specific part of that project.

Suggested Structured Learning Experiences

At least one District approved site visit to a construction site.