Exp. Building and Construction

Content Area: **CTE**
Course(s):
Time Period: **September**
Length: **1**
Status: **Published**

Unit Overview:

The Exploratory Building and Construction program will be one marking period (45 days) where students will explore the various career paths/opportunities available to them in the industry while developing basic construction skills. Students will learn what contributes to a healthy/productive class environment, identify and demonstrate safe working practices, identify basic hand/power tools used in the trade, and demonstrate proper/safe use. We will identify increments on a tape measure and connect fractions to measurement. After the rotation of a marking period in each Plumbing and Electrical, students that choose to continue their path with Construction will return for 4th marking period to expand on what they learned in more depth. They will refine their skills at using the hand/power tools to practice and develop good on-site construction practices.

Computer Science and Design Thinking Standards

• Chromebooks, Google Drive Storage & Related Google Apps

• MS Office Software as Needed

• SmartBoard Presentations and Peripheral Technology

• Smartphones

• Power Tools as Needed

TECH.9-12.TEP-3	Making and Doing
TECH.9-12.TEP-4	Critical Thinking
TECH.9-12.TEP-5	Optimism
TECH.9-12.TEP-6	Collaboration
TECH.9-12.TEP-7	Communication
TECH.9-12.TEP-8	Attention to Ethics

Enduring Understandings:

Through the delivery of the unit outlined above, students will understand: • how to safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals. .

• scheduling practices which ensure the successful completion of a construction project. .

• the contractual relationships between all parties involved in the building process. .

• the importance of maintaining jobsite safety.

. • the importance of preventative maintenance activities to service existing buildings. .

• troubleshooting procedures when solving a maintenance problem in buildings. . E

Career Education Connection

Osha 10 Certification

9.3.12.AC	Architecture & Construction
9.3.12.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.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.

Essential Questions:

What are the safety concerns to be considered when working in a lab setting in school or on the job?

What protection can be used in a laboratory environment? What should be part of an effective safety program?

What characteristics are essential to a functional team?

What are the benefits of working in a team environment as opposed to individually?

Why is planning an important aspect to project work?

How does planning influence efficiency?

Why is planning vital to material usage and construction?

How is the design of a product influenced by planning?

Assessments

Summative Assessment:

Summative assessments evaluate a student's overall learning and achievement at the end of a course or program. Here are some effective summative assessments for a construction curriculum:

High-stakes Assessments:

- Comprehensive Exams: Final exams covering a broad range of course material can assess students' overall understanding of key concepts and principles.
- Capstone Project Presentations: Formal presentations allow students to showcase their project management skills, decision-making, and communication abilities.

Performance-based Assessments:

- Project Portfolio Reviews: A portfolio compiled throughout the program can demonstrate a student's growth, technical skills, and problem-solving abilities in various areas of woodworking
- Simulated Project Management Tasks: Students could be presented with a realistic construction scenario where they have to apply their knowledge and skills to develop solutions or make critical decisions.

Industry-standard Certifications:

- Encouraging students to pursue industry certifications relevant woodworking can demonstrate their commitment to the field and mastery of specific skills.

Considerations for Choosing Summative Assessments:

- Alignment with Learning Outcomes: Ensure the chosen assessments directly measure the program's overall learning objectives and desired competencies.
- Depth vs. Breadth: Balance the need to assess a broad range of knowledge with in-depth exploration of critical skills.
- Authenticity: Choose assessments that reflect real-world scenarios and tasks woodworking encounter.
- Multiple Measures: Utilize a combination of assessments to provide a holistic picture of student learning.
- Faculty Collaboration: Ensure consistency and fairness in assessments across different courses within the program.

Additional Tips:

- Develop clear rubrics outlining specific criteria for evaluating performance on each summative assessment.
- Provide students with ample opportunities to practice and refine their skills before summative assessments.
- Offer feedback on summative assessments to help students identify areas for improvement and guide their future learning.

- Alternate Assessment
- Benchmark
- Marking Period Assessment

Benchmark Assessments

Writing Prompt

Skills Based Assessment

Reading Response

Alternative Assessment

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Formative Assessment:

Formative assessments are ongoing evaluations designed to identify student understanding and adjust teaching methods to optimize learning throughout the curriculum. Here are some effective strategies to integrate formative assessments in your construction program:

In-Class Activities:

- Quick Quizzes: Short, unannounced quizzes at the beginning or end of class can assess comprehension of key concepts from previous lessons or gauge readiness for new material..
- Think-Pair-Share: Encourage individual reflection followed by partnered discussions and sharing key takeaways with the class. This promotes active learning and identifies common misconceptions.
- Minute Papers: Have students write a one-minute summary of the main points learned or lingering questions they have. This helps identify areas needing clarification.

Classroom Discussions & Activities:

- Open-ended Questions: Encourage students to think critically and elaborate on their understanding by posing open-ended questions throughout lessons.
- Case Studies & Problem-solving: Present real-world construction scenarios or problems for students to

analyze and propose solutions. This assesses critical thinking and application of knowledge.
- Role-playing Activities: Simulate real-world situations like project meetings or client interactions to practice communication, negotiation, and problem-solving skills.

Peer-based Assessment:

- Peer Reviews: Students can review each other's work, providing constructive feedback on project plans, presentations, or technical drawings. This fosters collaboration and self-assessment skills.
- Group Work & Discussions: Collaborative activities encourage students to explain concepts to one another, solidifying their understanding and identifying areas where they can learn from peers.

Technology-assisted Assessments:

- Online Quizzes & Polls: Utilize online platforms for short quizzes, polls, or concept checks to gauge student understanding in real-time and adjust instruction accordingly.
- Self-assessment Tools: Provide online quizzes or exercises where students can assess their own understanding of key concepts and identify areas for self-directed learning.

Benefits of Formative Assessment:

- Improved Student Learning: Provide ongoing feedback that helps students identify strengths, weaknesses, and adjust their learning strategies.
- Informed Instruction: Instructors gain valuable insights into student understanding, allowing them to adapt teaching methods and address misconceptions promptly.
- Increased Student Engagement: Active participation in formative assessments keeps students engaged and invested in the learning process.
- Promotes Self-reflection: Encourage students to reflect on their learning journey, identify areas for improvement, and take ownership of their learning.

- Anticipatory Set
- Closure
- Warm-Up

Standards/Indicators/Student Learning Objectives (SLOs):

9.3.12.AC	Architecture & Construction
9.3.12.AC-CST	Construction
9.3.12.AC-DES	Design/Pre-Construction
9.3.12.AC-MO	Maintenance/Operations

Lesson Titles:

Orientation & Lab Safety

Reading Rulers & Fractions: Reading Ruler, Adding Fractions, Measuring Activities

Hammers & Nails

Measuring Scavenger Hunt Game

Review Measuring Methods, Intro to 345 Rule

Field Experiment 345 Rule

Marking & Squaring

Hand Saws

Introduction & Notes

Butt Joint Activity Outside

Miter Joint Activity Outside

Picnic Table Overview & Table Top Jig

Ideas Review Table Top Jig Options & Cut Tabletop Length

Teams Dry Fit-Assemble Jigs

Power Drills Screws, Screwdrivers & Picnic Table Construction

Teams Assemble Jigs, Power Drill Safety

Power Drill Quiz & Cut Cross Braces

Assemble Table Tops Leg

Assembly Seat

Assembly Recap Picnic Table

Activity & Introduction to Utility Knifes

Pricing & Cost Estimation Worksheet

Intro to Utility Knives: Operation & Blade Replacement

Scaffold Assembly & Ceiling Tile Replacement

Intro to utility knives and cutting materials: paper, foamboard, ceiling tile, drywall.

Drywall repair & window/door screen repair

Inter-Disciplinary Connections:

WRK.9.1.2.CAP	Career Awareness and Planning Different types of jobs require different knowledge and skills. There are benefits and drawbacks to being an entrepreneur. Income is received from work in different ways including regular payments, tips, commissions, and benefits.

Diversity, Equity, and Inclusion

Amistad Mandate

Topic:

Materials Used:

Addresses the Following Component of the Mandate:

- African Slave Trade
- Amistad
- Contributions of African Americans to our Society
- Slavery in America
- Vestiges of Slavery in this Country

Holocaust Mandate

Topic:

Materials Used:

Addresses the Following Component of the Mandate:

- Bias
- Bigotry
- Bullying
- Holocaust Studies

- Prejudice

LGBTQ and Disabilities Mandate

Topic (Person and Contribution Addresses):

Materials Used:

Addresses the Following Component of the Mandate:

- Economic
- Political
- Social

Climate Change

Asian American Pacific Islander Mandate

Topic (Person and Contribution Addresses):

Materials Used:

Addresses the Following Component of the Mandate:

- Economic
- Political
- Social

Materials:

Core Instructional Materials

Supplemental Materials

Texts at Various Levels

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

Group students based on topic knowledge

Create pods with student captains

Create tiered lessons

Create handouts for common questions

Include hands-on activities and projects

Provide study guides, worksheets, and notes

Flip your classroom

Use the Think-Pair-Share method

Try digital curriculum

Modifications

MLL Modifications:

- Choice of test format (multiple-choice, essay, true-false)
- Continue practicing vocabulary
- Provide study guides prior to tests
- Read directions to the student
- Read test passages aloud (for comprehension assessment)
- Vary test formats

G&T Modifications:

- Alternate assignments/enrichment assignments
- Enrichment projects
- Extension activities
- Higher-level cooperative learning activities
- Pairing direct instruction with coaching to promote self-directed learning
- Provide higher-order questioning and discussion opportunities
- Provide texts at a higher reading level
- Tiered assignments
- Tiered centers

At Risk Modifications

The possible list of modifications/accommodations identified for Special Education students can be utilized for At-Risk students. Teachers should utilize ongoing methods to provide instruction, assess student needs, and utilize modifications specific to the needs of individual students. In addition, the following may be considered:

- Additional time for assignments
- Adjusted assignment timelines
- Agenda book and checklists
- Answers to be dictated
- Assistance in maintaining uncluttered space
- Books on tape
- Concrete examples
- Extra visual and verbal cues and prompts
- Follow a routine/schedule
- Graphic organizers
- Have students restate information
- No penalty for spelling errors or sloppy handwriting
- Peer or scribe note-taking
- Personalized examples
- Preferential seating
- Provision of notes or outlines
- Reduction of distractions
- Review of directions
- Review sessions
- Space for movement or breaks
- Support auditory presentations with visuals
- Teach time management skills
- Use of a study carrel

- Use of mnemonics
- Varied reinforcement procedures
- Work in progress check

IEP & 504 Modifications:

*All teachers of students with special needs must review each student's IEP. Teachers must then select the appropriate modifications and/or accommodations necessary to enable the student to appropriately progress in the general curriculum.

Possible Modifications/Accommodations: (See listed items below):

- Allow for redos/retakes
- Assign fewer problems at one time (e.g., assign only odds or evens)
- Differentiated center-based small group instruction
- Extra time on assessments
- Highlight key directions
- If a manipulative is used during instruction, allow its use on a test
- Opportunities for cooperative partner work
- Provide reteach pages if necessary
- Provide several ways to solve a problem if possible
- Provide visual aids and anchor charts
- Test in alternative site
- Tiered lessons and assignments
- Use of a graphic organizer
- Use of concrete materials and objects (manipulatives)
- Use of word processor

Technology Materials

Promethean Board

Google Classroom

CNC Tech