Regional Occupational Program

Construction Technology 2026-2027 (NCCER-Aligned)

COURSE DESCRIPTION

This course provides students with hands-on construction experience aligned to NCCER Core curriculum concepts. Students develop and apply industry-relevant skills in construction safety, construction math, hand and power tools, materials handling, construction drawings, communication, employability, and laboratory project work. Emphasis is placed on safe work practices, problem solving, teamwork, and the application of technical skills in real-world construction scenarios. This course prepares students for entry-level employment and further training opportunities in the construction industry.

Note: **Students** will complete written and performance-based assessments aligned to NCCER Core curriculum concepts to demonstrate knowledge and hands-on skill development.

Course Information

Course Length:	405 Hours
Prerequisite:	None
Course Level:	Capstone
UC:	No
Articulated:	No
Industry Cert.:	No - NCCER Core aligned
Industry Sector:	Building and Construction Trades
Pathway:	Residential Commercial Construction
CALPADS:	7342

O*Net SOC Codes

47 -2061	Construction Laborers
47-2152	Plumbers, Pipefitters, and Steamfitters
47-2141	Painters, Construction and Maintenance

Legend

CTE - PS	CTE Pathway Standards
CRP	Career Ready Practices
CTE - AS	CTE Anchor Standards
CCSS	Common Core State Standards
ISTE	International Society for Technology in Education

Includes updates from the 25/26 Construction Advisory

Advisory Minutes

Construction Trades

Course Orientation

a. Discuss objectives for this course, including competencies, teacher expectations, classroom policies, and procedures.
b. Identify and discuss the acquisition of transferable skills (communication, collaboration, creativity, and critical thinking) and their importance to being college and career ready and for future personal and professional success.
c. Review objectives, competencies, and course syllabus.
d. Discuss student and teacher expectations, including behavior, class rules, appropriate dress, pre-course knowledge, and grading policies, including enrollment and attendance requirements and procedures, and classroom/school safety and disaster procedures.
e. Discuss next steps in course sequence related to the career pathway, the need for reinforcement of basic skills, transferrable skills, and postsecondary and career options.
f. Discuss the Big Six: Career Ready Essentials and the Standards for Career Ready Practice as they relate to this course, all aspects of the industry sector, and being college and career ready.

Big Six: Career Ready Essentials

1. Effective Communication	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate effective verbal communication and conflict resolution skills. **b. Use the writing process to develop written communication with the appropriate tone, organization, and format for the identified audience.** c. Explain the effect of interpersonal skills on one's ability to communicate effectively and develop relationships. d. Describe the impact of ineffective communication on business relationships. e. Analyze the impact of vocabulary, body language, and tone on verbal communication. f. Demonstrate active listening skills. g. Accurately interpret industry-specific written communication. h. Model responsible and effective use of various communication technologies. i. Identify valid and reliable digital reference and resource materials. j. Gather information from multiple digital sources to compare and contrast, synthesize, and summarize. k. Identify and use appropriate communication and collaboration technologies. l. Utilize technology to problem solve, accomplish tasks, and to produce or publish products.		1 2 11	2 3 4 5 7 8 9 10 11	**LS** 9-10 11-12.6 **SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.7 11-12.6	1b,c 2c 3b,c 5c 6b,c,d

2. Collaboration, Creativity, and Critical Thinking	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate critical thinking skills for a variety of purposes and in different settings. **b. Collaborate to reach consensus on an identical objective through the sharing of knowledge, tasks, and learning.** c. Discuss the importance of the critical thinking process to real-world applications.		2 4 5 7 9	2 3 4 5 7	**LS** 9-10 11- 12.6 **SLS** 9-10	1c 3c,d 4a-d 5c,d 6c

d. Evaluate the impact of creative thinking on problem solving and innovation in real-world applications. e. Compile work that demonstrates the process used to (elaborate, refine, analyze) evaluate original ideas and maximize creative efforts. f. Apply divergent and convergent thinking to the development of an original idea or solution. g. Examine real-world limits to adopting ideas. h. Demonstrate creative thinking (preparation, insight, evaluation, elaboration, and communication) to create a new idea or concept. i. Assume shared responsibility for collaborative work, and value the individual contributions made by each team member. j. Evaluate evidence, arguments, claims, and beliefs to identify connections. k. Identify bias, prejudice, propaganda, self-deception, distortion, and misinformation. l. Produce intellectual, informational, or material products that serve an authentic purpose. m. Work effectively and respectfully with those from diverse backgrounds or cultures. n. Demonstrate respect, trust, commitment, and the ability to compromise in collaborative projects.		10 11	8 9 11	11-12.1 11-12.1d 11-12.2 **WS** 11-12.7 11-12.6	7b,c,d
3. Leaders and Teams: Roles and Responsibilities	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Determine the individual and team members' roles and responsibilities. **b. Demonstrate leadership skills and qualities (i.e., reliability, negotiation skills, initiative, positive reinforcement, recognition of others' efforts, problem-solving skills, conflict resolution, and delegation).** c. Explain the importance of technical, social, and communication skills to team success. d. Compare and contrast leadership styles and their effectiveness in various situations. e. Organize and delegate responsibilities in a team setting to encourage ideas, perspectives, and contributions from all team members. f. Develop a strong sense of team identity by brainstorming solutions, volunteering, assisting others, practicing respect and courtesy, and taking initiative. g. Examine situations in which a follower becomes the leader. h. Describe twenty-first-century skills required across all occupations. i. Identify and discuss the characteristics of a successful team (i.e., leadership, cooperation, and effective decision-making). j. Leverage social and cultural differences to increase innovation and quality of work.		7 8 9	3 7 8 9 11	**SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.6	7a,c
4. Legal, Ethical, and Environmental Considerations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate industry specific ethical and legal practices. **b. Identify eco-friendly industry specific practices and resources.** c. Identify local, state, and federal regulatory agencies, entities, laws, and regulations.		5 7 8 12	3 5 7 8	**WS** 11-12.6 11-12.7	2a,b 3a,b 5c 6c

d. Identify discrimination based on race, nationality, religion, gender, age, disability, or sexual orientation. e. Summarize the ethical and legal implications of workplace discrimination and harassment. f. Explain the concept of corporate citizenship. g. Examine an employer's role in protecting the health and welfare of employees, the community, and the environment. h. Analyze current environmental laws and regulations and their impact on industry. i. Compare and contrast both society's and industry's impact on the environment.			9 11	**SLS** 9-10 11-12.1 11-12.1d 11-12.2	
5. Personal Growth and Career Planning	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate continued personal development and growth. **b. Develop and manage a personal growth and career plan.** c. Explain the relationship between sound financial habits and financial security. d. Create and manage a personal financial plan. e. Demonstrate initiative in achieving personal and professional goals. f. Apply time management strategies to meet deadlines. g. Demonstrate a growth mindset through flexibility and a positive attitude. h. Select and demonstrate appropriate job-search and retention techniques. i. Demonstrate strategies to prepare for employment. j. Demonstrate interpersonal skills appropriate for the workplace. k. Elaborate on the importance of perseverance to personal and professional success. l. Discover personal career interests, aptitudes, and skills.		1 2 3 4 6	2 3 4 7 8 11	**LS** 9-10 11-12.6 **SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.6	1a 3a,c 4d 6a,d 7b
6. Workplace Safety and Personal Wellness	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate proper industry specific safe work practices to prevent injury or illness. **b. Assess the potential impact of goal setting on personal and professional success.** c. Describe the role of security and emergency procedures in workplace safety. d. Describe the effect of preventative measures on emergencies in the workplace. e. Identify and describe the causes, prevention, and treatment of common accidents. f. Identify local, state, and federal agencies that regulate workplace safety. g. Explain the role of the California Occupational Safety and Health Administration (Cal-OSHA) and the Environmental Protection Agency (EPA). h. Discuss the basics of system operations. i. Demonstrate the proper use of personal protective equipment (PPE). j. Explain the purpose of and accurately interpret a Safety Data Sheet (SDS). k. Identify hazardous materials and chemicals. l. Demonstrate proper procedures to respond to work-related accidents and injuries. m. Describe how ergonomics, housekeeping, and maintenance are related to accidents and injuries.		2 5 6 8 12	2 5 6 7 8 10 11	**LS** 9-10 11-12.6 **WS** 11-12.7 11-12.6 **SLS** 9-10 11-12.1 11-12.1d	1a,d 2a,d 5b

n. Demonstrate cyber ethics, cyber safety, and cybersecurity. o. Assess the potential impact of preventative physical and mental health measures on workplace safety.					
Construction Units of Instruction (NCCER-Aligned)					
7. Basic Safety (51 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control. **b. Explain the role of OSHA in job-site safety.** **c. Describe the safe work requirements for elevated work, including fall protection guidelines.** **d. Identify common energy-related, exposure, environmental, hot work, fire, and confined space hazards and explain how to avoid them.** **e. Describe the basic concepts of material handling and safety precautions.** f. Define incidents and the significant costs associated with them. g. Explain the basic safety guidelines for fire prevention. h. Describe the ergonomic guidelines employees should follow when lifting objects and performing repetitive tasks. i. Explain OSHA's General Duty Clause and 1926 CFR Subpart C. j. Explain fall protection, ladder, stair, and scaffold procedures and requirements. k. Explain how to minimize the risks associated with hand and power tools. l. Identify and demonstrate safe working procedures and requirements. m. Identify struck-by hazards and caught-in-between hazards and demonstrate safe working procedures and requirements. n. Define safe work procedures to use around electrical hazards. o. Inspect and demonstrate the use and care of appropriate personal protective equipment (PPE). p. Explain the importance of hazard communications (HazCom) and Safety Data Sheets (SDSs). q. Identify other construction hazards on your job site, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires. r. Properly set up and climb/descend an extension ladder, demonstrating proper three-point contact. s. Properly don and remove PPE (safety goggles, hard hat, gloves, hearing protection, and personal fall protection). t. Demonstrate proper use of American National Standards Institute (ANSI) hand signals. u. Understand the importance of safety and safe work practices (e.g., fire safety, protective clothing) in the welding phases of engineering and heavy construction and the safe operation of heavy equipment (e.g., earth movers, graders, bulldozers). v. Describe the importance of work site safety as it pertains to hazardous waste disposal and procedures for containment of toxic and hazardous materials.	B5.3 B9.2 B9.3 B9.4	2 5 6 11 12	2 5 6 11	**LS** 9-10 11-12.6 **WS** 11-12.7 **RSTS** 9-10 11-12.4	

w. Explain safety guidelines for welding and cutting, working in confined spaces, and fires. x. Define and apply appropriate basic construction trade safety terms.					
8. Introduction to Construction Math (41 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Identify whole numbers and demonstrate how to work with them mathematically. **b. Demonstrate how to work with fractions.** **c. Identify various tools used to measure length and show how they are used.** **d. Explain the decimal system and explain how to work with decimals.** **e. Convert units of length, weight, volume, and temperature between different systems of measurement.** **f. Identify basic angles and geometric shapes and explain how to calculate their area and volume.** g. Identify different whole numbers and their place values. h. Demonstrate the ability to add, subtract, multiply, and divide whole numbers. i. Use and read a standard ruler, metric ruler, architect, and engineer scales, and measuring tape. j. Identify equivalent fractions and their lowest common denominator. k. Change an improper fraction to a mixed number. l. Add, subtract, multiply, and divide fractions. m. Demonstrate the ability to add, subtract, multiply, and divide decimals. n. Convert decimals to percentages and percentages to decimals. o. Convert units of measurement from standard to metric measuring systems. p. Identify types of angles and basic geometric shapes and their characteristics. q. Demonstrate how to calculate the volume of two and three-dimensional shapes. r. Apply the Pythagorean Theorem to calculate pipe offsets, roof slope, and check for square. s. Estimate material costs. t. Define and apply appropriate construction mathematical trade terms.	D2.0 D2.2 D2.3	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
9. Construction Drawings (53 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Identify and describe various types of construction drawings. **b. Identify and describe the purpose of the five basic construction drawing components.** **c. Demonstrate a basic understanding of plan order, symbols, and measurements hierarchy.** d. Compare and contrast civil, architectural, mechanical, plumbing/piping, electrical, and fire protection plans. e. Explain the purpose of the title block, border, drawing area, revision block, and legend of constructions drawings. f. Describe the significance of scale, lines of construction, symbols, and grid lines. g. Explain the importance of construction drawings and specifications as legal contract documents.	D3.1 D3.3 D3.4 D3.5	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

h. Conceptualize a foundation platform project design floor plan, including elevations, details, sections, roof plan, etc. to scale. i. Demonstrate knowledge of material take-offs, estimating, spreadsheet skills, and purchasing skills. j. Demonstrate how to confirm accurate material delivery. k. Define and apply appropriate construction drawing trade terms.					
10. Hand Tools (15 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Identify and explain how to use various types of hand tools. **b. Identify and describe how to use various types of measurement and layout tools.** **c. Identify and explain how to use various types of cutting and shaping tools.** **d. Identify and explain how to use common hand tools.** e. Inspect and explain how to safely use hammers, demolition tools, chisels, punches, and screwdrivers. f. Inspect and explain how to safely use non-adjustable, adjustable, socket, and torque wrenches. g. Inspect and explain how to safely use various types of pliers and wire cutters. h. Inspect and explain how to safely use rules, measuring tools, levels, and squares. i. Inspect and explain how to safely use a plumb bob, saw, files and rasps, clamps, shovels, and picks. j. Define and apply appropriate hand tool trade terms.	A4.1 A4.2 A4.3 A4.7	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
11. Introduction to Power Tools (12 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Identify electric, pneumatic, and hydraulic tools and explain their power sources. **b. Identify and explain how to safely use various types of power drills and impact wrenches.** **c. Identify and explain how to safely use various types of power saws.** **d. Identify and explain how to safely use various grinders and grinder attachments.** **e. Identify and explain how to safely use miscellaneous power tools.** f. Identify and demonstrate how to safely use common power drills and bits and hammer drills. g. Identify and demonstrate how to safely use pneumatic drills, impact wrenches, pneumatic nail guns, and power actuated tools. h. Identify and demonstrate how to safely use circular, saber, reciprocating, portable band, miter, and cutoff saws. i. Identify and demonstrate how to safely use air impact wrenches, pavement breakers, and jacks. j. Identify and demonstrate how to safely use various types of grinders and their accessories and attachments. k. Identify and demonstrate how to safely use pneumatic and power actuated fastening tools. l. Define and apply appropriate power tool trade terms.	A4.2 A4.3	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

12. Introduction to Materials Handling (8 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Describe the basic concepts of material handling and common safety precautions. **b. Identify various types of material handling equipment and describe how they are used.** c. Explain the basic concepts of material handling such as stacking, storing, working from heights, and with cables and manual lifting. d. Identify common material handling safety precautions. e. Demonstrate safe manual lifting techniques. f. Identify and demonstrate how to tie square, bowline, half hitch, and clove hitch knots used in material handling. g. Recognize common hitches and basic load-handling considerations used in introductory rigging applications. h. Identify non-motorized material handling equipment and describe how they are used. i. Identify motorized material handling equipment and describe how they are used. j. Identify common rigging equipment and describe basic safe rigging awareness practices used when lifting and moving materials. k. Demonstrate proper hand signals when working with motorized equipment. l. Demonstrate the Emergency Stop hand signal and explain the importance of clear communication during lifting and material movement operations. m. Define and apply appropriate material handling trade terms.		1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
13. Basic Communication Skills (11 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Describe the communication, listening, and speaking processes and their relationship to job performance. **b. Describe good reading and writing skills and their relationship to job performance.** **c. Describe how to effectively communicate via phone, email, and radio.** d. Describe good reading and identify good listening skills. e. Describe the listening process and identify good listening skills. f. Describe the speaking process and identify good speaking skills. g. Describe the importance of good reading and writing skills. h. Describe job-related reading requirements and identify good reading skills. i. Describe job-related writing requirements and identify good writing skills. j. Define construction communication trade terms.	D3.0	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
14. Basic Employability (48 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Describe the opportunities in the construction business and how to enter the construction workforce. **b. Explain the importance of critical thinking and how to solve problems.**		1 2 3	1 2 3	**LS** 9-10 11-12.6	

c. Explain the importance of social skills and identify ways good social skills are applied in the construction trade. **d. Prepare a well written resume and cover letter.** e. Describe the roles of companies and individuals in the construction business. f. Explain how workers can enter the construction workforce. g. Describe critical thinking and barriers to solving problems. h. Describe how to solve problems using critical thinking. i. Describe problems related to planning and scheduling. j. Identify good personal, social, marketable skills, and abilities. k. Explain how to resolve conflicts with coworkers and supervisors. l. Explain how to give and receive constructive criticism. m. Identify and describe various issues of concern such as sexual harassment, stress, and substance abuse in the workplace. n. Describe how to work in a team environment and how to be an effective leader. o. Apply computer skills to industry applications and job search activities. p. Define and appropriately use employability trade terms.		5 11	5 11	**SLS** 11-12.2 **WS** 11-12.7	
15. Laboratory Project (166 hours)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate safety practices and procedures that are part of a safety culture. **b. Demonstrate accurate construction mathematical skills.** **c. Practice safe and appropriate use of hand and power tools.** **d. Accurately interpret construction drawings.** **e. Communicate effectively with supervisors and co-workers.** **f. Practice employability skills that lead to a successful career in the construction industry.** **g. Demonstrate basic understanding of material handling techniques and procedures.** **h. Apply safe rigging-awareness practices, signaling, and load-movement precautions during laboratory material handling activities, when applicable.** **i. Demonstrate marketable construction trade skills.** j. Demonstrate a willingness to work as part of a team, critically think, and problem solve. k. Demonstrate tool proficiency, accuracy and attention to detail. l. Demonstrate clean up skills and work speed efficiency. m. Interpret floor plans, elevations, roof plans, details, plumbing schematics, and electrical plans to construct a lab project. n. Demonstrate knowledge and trade skills such as material estimating, demolition, roofing, plumbing, carpentry, drywall installation, and finishing and electrical.	A1.3 A1.4 A1.7 D2.0 D2.3 D3.0 D3.3 D3.4 D6.0 D7.0 D10.0 D11.0	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

Required Assignments, Hours of Instruction, and Assessment

Basic Safety Assignment	Hours
a) OSHA 10-Hour Construction safety content	10
b) Basic Safety (NCCER-aligned content)	40
c) Test/Trade Terms	1
	51

Assessment and Evaluation	Minimum Passing Score
Written Exam	100%
Trade Terms Exam	100%

Introduction to Construction Math Assignment	Hours
a) Addition, Subtraction, Multiplication and Division	4
b) Fractions	6
c) Decimals	6
d) Measurement Tools (Rulers, Tapes, Scales)	4
e) Decimal and Fraction Conversions	4
f) Metric System	6
g) Basic Geometry	10
h) Test/Trade Terms	1
	41

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Construction Drawings Assignment	Hours
a) Plans and Specifications	4
b) Scale, Components and Symbols	8
c) Types of Drawings	6
d) Let Your Fingers Do the Walking	8
e) Field Administration and Lay-Out	8
f) Material Take-Offs	8
g) Estimating	10
h) Test/Trade Terms	1
	53

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Assignment	Hours
a) Hammers, Saws & Levels	2
b) Nail Pullers, Bars, Chisels & Punches	2
c) Screw Drivers, Pliers & Wire Cutters	2
d) Wrenches, Sockets & Ratchets	2
e) Rules, Measuring Tools, Levels & Squares	2
f) Miscellaneous	1
g) Lab Demonstration	3
h) Test/Trade Terms	1
	15

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Introduction to Power Tools Assignment	Hours
a) Power and Safety (General), Drills & Saws	3
b) Grinders and Sanders	1
c) Pneumatic Nail Guns & Powder Actuated Tools	2
d) Air Impact Wrenches, Pavement Breakers, Jacks	1
e) Lab Demonstration	4
f) Test/Trade Terms	1
	12

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Introduction to Materials Handling Assignment	Hours
a) Hazards	4
b) Handling Techniques and Procedures	1
c) Equipment	1
d) Stacking	1
e) Test/Trade Terms	1
	8

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Basic Communication Skills Assignment	Hours
a) Techniques–Coworkers and Supervisors	2
b) Verbal Communication	2
c) Written Communication	2
d) Phone Styles	2
e) Emails and Forms	2
f) Test/Trade Terms	1
	11

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Basic Employability Assignment	Hours
a) Roles of Company and Individuals	2
b) Critical Thinking	2
c) Problem Solving	2
d) Computer Clinic	10
e) Relationship Skills	3
f) Learning Inventory	3
g) Motivation Exercise	3
h) Self-Presentation	3
i) Harassment	3
j) Stress	3
k) Substance Abuse	3
l) Resume and Cover Letter Writing	10
m) Test/Trade Terms	1
	48

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Trade Terms Exam	70%

Laboratory Project Assignment	Hours
a) Conceptual & Material Take-Off	6
b) Demolition	14
c) Lay-Out & Bottom Plate	3
d) Frame	20
e) Top Plate & Ceiling Joist	6
f) Rafters	16
g) Roof Sheathing	4
h) Rough Plumbing	8
i) Rough Electrical	13
j) Roof Underlayment and Roofing	10
k) Drywall Lid & Walls; Apply Corner Bead	20
l) First Tape and Spot Nails	10
m) Sand and Second Tape	10
n) Windows/Siding	10
o) Exterior Preparation/Paint	4
p) Texture	2
q) Finish Carpentry	4
r) Prep and Paint	4
s) Finish Electrical	2
	166

Assessment and Evaluation	Minimum Passing Score
Written Exam	70%
Performance	70%
• Attendance-20	
• Tardiness-20	
• Participation-40	
• Problem Solving-10	
• Critical Thinking-10	

Performance Outcomes (NCCER-Aligned)

Safety

Safety culture.
Accident causes.
Role of Occupational Safety and Health Administration (OSHA).
The OSHA General Duty Clause and 1926 CFR Subpart C.
Hazard recognition and risk assessment techniques.
Fall protection. Ladder, stair, and scaffold use.
Struck-by hazards.
Safe working procedures, including electrical.
Use and care of Personal Protective Equipment.
HazCom and Safety Data Sheets (SDS).
Hazardous material exposures and environmental elements.
Welding, cutting, working in confined spaces, and fires.

Mathematics

Addition, subtraction, multiplication, and division of whole numbers.
Standard ruler, metric ruler, and measuring tape.
Addition, subtraction, multiplication, and division of fractions.
Decimals.
Percentage conversions.
Metric system use.
Basic shape calculation.
Quantity take-offs.

Hand Tools

Construction hand tool use and care.
Tool inspection.
Hammers, saws, pliers, wrenches, measuring tapes, drywall/taping tools, cat's paw, wrecking bars, chisels, screwdrivers, levels, squares, plumb bobs, chalk line, files, and clamps.

Power Tools

Construction hand tool use and care.
Tool inspection.
Electric drills, hammer drills, circular saws, worm-drive saws, sabre saws, Sawz All, pneumatic nailers, table saws, compound miter saws, grinders, powder-actuated fasteners, and jacks.

Construction Drawings

Terms, components, and symbols.

Ability to read and interpret tentative maps, record maps, parcel maps, grading plans, plot plans, improvement plans, architectural plans, structural plans, plumbing schematics, electrical schematics, HVAC lay-outs, etc.
Contract documents, specifications, and references.
Hierarchy of plan organization – title page, general notes, specific notes.
Foundation plans, floor plans, 2nd floor plans, elevations, sections, roof plans, details, etc.

Communication

Interpret written and verbal communication.
Communicate effectively – verbal and written.
Communicate effectively using electronic communication devices.

Employability

Management and worker roles.
Work on critical thinking skills.
Work on problem solving skills.
Get acquainted with computer devices and skills.
Relationship skills.
General harassment, sexual harassment, stress, and alcohol/drug use.
Life skills workshops.

Materials

Definition of various types of loads.
Creating a pre-task plan.
Exercising proper materials handling techniques.
Utilizing proper equipment to handle materials.
Recognizing hazards and following proper safety procedures.
Being proactive about hazard mitigation.

Standards Alignment

The curricula have been aligned with the CTE Model Curriculum Standards released in 2013. Each industry sector was updated to meet the increased rigor and relevancy requirements of the Common Core State Standards. The curriculum also includes the new Standards for Career Ready Practices.

Standards for Career Ready Practice

1. *Apply appropriate technical skills and academic knowledge.*
2. *Communicate clearly, effectively, and with reason.*
3. *Develop an education and career plan aligned with personal goals.*
4. *Apply technology to enhance productivity.*
5. *Utilize critical thinking to make sense of problems and persevere in solving them.*
6. *Practice personal health and understand financial literacy.*
7. *Act as a responsible citizen in the workplace and the community.*
8. *Model integrity, ethical leadership, and effective management.*
9. *Work productively in teams while integrating cultural and global competence.*
10. *Demonstrate creativity and innovation.*
11. *Employ valid and reliable research strategies.*
12. *Understand the environmental, social, and economic impacts of decisions.*

5CTE Anchor Standards—Common Core English Language Arts Alignment

Anchor Standard 1: Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the industry sector alignment matrix for identification of standards. Note: alignment listed within each sector.

Anchor Standard 2: Communications

Language Standard: Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. LS 9-10, 11-12.6

Anchor Standard 3: Career Planning and Management

Speaking and Listening Standard: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SLS 11-12.2

Anchor Standard 4: Technology

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.

Anchor Standard 5: Problem Solving and Critical Thinking

Writing Standard: 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, and synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WS 11-12.7

Anchor Standard 6: Health and Safety

Reading Standards for Science and Technical Subjects: Determine the meaning of symbols, keywords, and other domain-specific words and phrases as they are used in a specific scientific or technical context. RSTS 9-10, 11-12.4

Anchor Standard 7: Responsibility and Flexibility

Speaking and Listening Standard: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly and persuasively. SLS 9-10, 11-12.1

Anchor Standard 8: Ethics and Legal Responsibilities

Speaking and Listening Standard: Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the work. SLS 11-12.1d

Anchor Standard 9: Leadership and Teamwork

Speaking and Listening Standard: Work with peers to promote civil, democratic discussions and decision making; set clear goals and deadlines; and establish individual roles as needed. SLS 11-12.1b

Anchor Standard 10: Technical Knowledge and Skills

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. WS 11-12.6

Anchor Standard 11: Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators in the classroom, laboratory, and workplace settings, and the career technical student organization. Note: no alignment evident for this standard. WS 11-12.6

CTE Model Curriculum Standards—Industry Sectors and Pathways

BCT: Building and Construction Trades

A. Cabinetry, Millwork, and Woodworking Pathway

A1.3 Calculate board, square, and linear feet.
A1.4 Estimate material costs.
A1.7 Read and interpret technical drawings.
A4.1 Demonstrate the accurate use of common measuring and layout tools.
A4.2 Select the proper layout tools for specific tasks.
A4.3 Select the proper cutting tools for specific operations (e.g., straight cuts, curves, drilling holes).
A4.7 Select proper clamping tools for specific operations.

D. Residential and Commercial Construction Pathway

D2.0 Apply the appropriate mathematical calculations used in the construction trades.
D2.2 Apply the Pythagorean Theorem to calculate pipe offsets, roof slope, and check for square
D2.3 Estimate the materials needed to complete a specific task.
D3.0 Interpret and apply information from technical drawings, schedules, and specifications used in the construction trades.
D3.1 Identify the elements used in technical drawings, including types of lines, symbols, details, and views.
D3.3 Interpret technical drawings specifications.
D3.4 Identify plumbing, electrical, and mechanical symbols and other abbreviations used in construction drawings.
D3.5 Interpret and scale dimensions from a set of plans using an architect's scale.
D6.0 Demonstrate carpentry techniques for the construction of a single-family residence.
D7.0 Demonstrate proper installation techniques of interior finish materials and protective finishes.
D10.0 Demonstrate skills necessary to complete a plumbing system in a single-family residence in accordance with accepted industry standards.
D11.0 Demonstrate skills necessary to complete an electrical system in a single-family residence in accordance with accepted industry standards.

ISTE Standards for Students

1. Empowered Learner- Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

a) Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them, and reflect on the learning process itself to improve learning outcomes.

b) Students build networks and customize their learning environments in ways that support the learning process.

c) Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways

d) Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen- Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

a) Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

b) Students engage in positive, safe, legal, and ethical behavior when using technology, including social interactions online or when using networked devices.

c) Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

d) Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3. Knowledge Constructor- Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.

a) Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

b) Students evaluate the accuracy, perspective, credibility, and relevance of information, media, data, or other resources.

c) Students curate *information from digital resources using a* variety of tools *and methods to create* collections of artifacts *that demonstrate* meaningful connections or conclusions.

d) Students build knowledge *by actively* exploring *real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.*

4. Innovative Designer- Students use a variety of technologies within a design process to identify and solve problems creating new, useful, or imaginative solutions.

a) Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

b) Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

c) Students develop, test, and refine prototypes as part of a cyclical design process.

d) Students exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.

5. Computational Thinker- Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

a) Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.

b) Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

c) Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

d) Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator- Students communicate clearly and express themselves creatively for a variety of purposes using platforms, tools, styles, formats, and digital media appropriate for their goals.

a) Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

b) Students create original works or responsibly repurpose or remix digital resources into new creations.

c) Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

d) Students publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator- Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

a) Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

b) Students use collaborative technologies to work with others, including peers, experts, or community members, to examine issues and problems from multiple viewpoints.

c) Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

d) Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.