PLUMBING

INDUSTRY SECTOR | Building and Construction

PATHWAY | Residential and Commercial Construction

Theme – H20 Foundations Engaging Course Title: The pipeline of civilization

COURSE ESSENTIAL QUESTION:

Does plumbing protect the health of the nation?

COURSE OVERVIEW:

This instructional program prepares individuals to assemble, install, and repair pipes, fittings, and fixtures of heating, water, and drainage systems according to specifications and plumbing codes. Integrated throughout the course are Common Core State Standards and Career Technical Education Standards, which include safety, communication, technology, ethics, career planning and other employability skills**.**

INFORMATION:

A. Pre-requisite: 16 years old or a 11th/12th grader
B. Abilities Required: Manual dexterity, read and write, basic math, follows instructions
C. Dress Requirement and Grooming: Must dress code/industry standard
D. Students must master Click here to enter text.**% of the certificate competencies to receive a certificate.**
E. Fee: Click here to enter text.
F. Course Length: 90 hours
G. Textbook: "Plumbing Code" and "Modern Plumbing"
H. UC a-g Approved: No
I. Industry Certification: No
J. Sequencing to Include a Capstone: Not Applicable
K. Community College Articulation: No
L. Common Core Alignment: Yes
M. Community Classroom: No
N. Career Technical Student Organization: No
O. Work-Based Learning: No

IDEA/THEME: UNIT 1. HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT
ENGAGING TITLE:
ESSENTIAL QUESTION: ARE YOU ACCIDENT FREE?
INSTRUCTIONAL HOURS: 3 HOURS

Common Core Unit Objective

Instruction in unit to include accident procedures and reporting, safe work practices, and complete classroom procedures and safety drills.

Certificate Competencies

- Describes accident procedure
- Demonstrate appropriate safety practices (e.g. bending, lifting, etc.)
- Demonstrates knowledge of classroom procedures and drills (e..g. earthquake, fire and emergency).
- Working condition

Key Assignments

- Demonstrate appropriate safety procedures and installation standards as per the Uniform Plumbing Code, while assembling copper tubing.
- Practice accident procedures, safety test and class procedures.

Anchor Standards

6.1 Interpret policies, procedures, and regulations for the workplace environment, including employer and employee responsibilities.
6.2 Use health and safety practices for storing, cleaning, and maintaining tools, equipment, and supplies.
6.3 Set up a work area, or shop, to avoid potential health concerns and safety hazards, including but not limited to electrical (shock), wires (tripping), fumes (lung health), noise (hearing loss), fire (burns), and so forth, incorporating ergonomics.
6.6 Maintain a safe and healthful working environment.
6.7 Be informed of laws/acts pertaining to the Occupational Safety and Health Administration (OSHA).
6.8 Report hazards found on the job site to supervisor/teacher.
6.9 Locate, and adhere to, Material Safety Data Sheet (MSDS) instructions.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D1.2 Understand the environmental regulations that influence residential and commercial design.
D1.0. Recognize the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry.
  D1.1 Understand significant historical trends in the construction industry.
  D1.2 Understand the environmental regulations that influence residential and commercial design.
D6.0 Demonstrate carpentry techniques for the construction of a single-family residence.
  D6.1 Properly place a moisture barrier and pest control guard on a foundation.
  D6.2 Attach a sill plate at top of concrete foundation.
  D6.3 Lay out, cut, and install joist supports, rim joists, and floor joists as specified on construction plans.
  D6.7 Demonstrate the ability to square wall systems and install wall bracing and shear panels according to code.
  D6.8 Stand, square, plumb, and brace walls.
  D6.9 Describe the applications and uses of metal stud framing.

Common Core Standards

WS 11.12.7 Conduct short as well as more sustained research projects to answer a 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.

RESOURCES:

Resources

1. Charts/Graphics
2. Media
3. Modeling
4. Demonstrations

IDEA/THEME: UNIT 2. HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT
ENGAGING TITLE:
ESSENTIAL QUESTION: ARE YOU CAREFUL?
INSTRUCTIONAL HOURS: 3 HOURS

Common Core Unit Objective

At the completion of the unit students will be able to identify and use Uniform Plumbing Code, identify proper materials, analyze proper installation procedures.

Certificate Competencies

- Defines sexual harassment and discusses tactics for handling harassment situations.
- Applies appropriate workplace behavior and standards.
- Identifies appropriate building permits and codes.
- No illegal drugs or alcohol.
- Drug testing procedures.
- Proper electronic legal requirements i.e. email/phone.

Key Assignments

- Workplace behavior practice, intro to plumbing code, piping installation. Observing film in class showing tools, materials, assembly instructions.
- Safety Precautions

Anchor Standards

7.3 Understand the need to adapt to changing and varied roles and responsibilities.
8.1 Access, analyze and implement quality assurance standards of practice.
8.3 Identify local, district, state and federal regulatory agencies, entities, laws, and regulations related to the Building and Construction trades industry Sector.
8.3 Demonstrate ethical and legal practices consistent with Building and Construction Trades Sector workplace standards.
8.4 Explain the importance of personal integrity, confidentiality and ethical behavior in the workplace.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.

Common Core Standards

RLST11-12.9 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.

WS 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.

RESOURCES:

Resources

1. Legal Findings
2. New Laws
3. Media Videos
4. Plumbing Codebook

IDEA/THEME: UNIT 3. LEADERSHIP AND TEAMWORK
ENGAGING TITLE:
ESSENTIAL QUESTION: ARE YOU DOING THE RIGHT THING AT THE RIGHT TIME?
INSTRUCTIONAL HOURS: 3 HOURS

Common Core Unit Objective

Instruction of teamwork, leadership benefits and importance of doing the right thing at the right time. Learning to inter-act how to take and receive constructive criticism.

Key Assignments

- Student outcomes, plumbing skills practice, and CPVC pipe installation. Plumbing skills will include group discussions regarding leadership in workshops.
- Discussion among student assembly groups discussing projects

Anchor Standards

9.1 Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.
9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.
9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.
9.4 Explain how professional associations and organizations and associated leadership development and competitive career development activities enhance academic preparation, promote career choices, and contribute to employment.
9.5 Understand that the modern world is an international community and requires an expanded global view.
9.6 Respect individual and cultural differences and recognize the importance of diversity in the workplace.
9.7 Participate in interactive teamwork to solve real Building and Construction Trades Sector.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D1.2 Understand the environmental regulations that influence residential and commercial design.
D1.3 Demonstrate knowledge of the California Environmental Quality Act (CEQA) and Environmental Impact Review (EIRs) impacts on residential and commercial construction.

Common Core Standards

RSIT 11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

RESOURCES:

Resources

1. Directions
2. Images
3. Legal Findings
4. Plumbing Codebook

IDEA/THEME: UNIT 4. STUDENT OUTCOMES
ENGAGING TITLE:
ESSENTIAL QUESTION: ARE YOU DOING THE RIGHT THING?
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Important instruction and class discussion of all student outcomes leading to success in the professional working environment.

Certificate Competencies

- Demonstrate Occupational Specific, Communication and Critical Thinking Skills.
- Demonstrates responsible work ethics.
- Demonstrates Career/Employment Literacy.
- Demonstrates Effective Use of Technology.
- Uniform plumbing code

Key Assignments

- Student outcomes practice and plumbing code, using UPC study guides to insure comprehension. Reviewing outcomes to insure understanding for success.
- Student study groups

Anchor Standards

10.1 Interpret and explain terminology and practices specific to the Building and Construction Trades Sector.
10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D1.2 Understand the environmental regulations that influence residential and commercial design.
D1.3 Demonstrate knowledge of the California Environmental Quality Act (CEQA) and Environmental Impact Review (EIRs) impacts on residential and commercial construction.

Common Core Standards

RLST 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.

RESOURCES:

Resources

1. Uniform Plumbing Codebook
2. Legal Findings
3. Technology
4. Internet Search

IDEA/THEME: UNIT 5. MATH CONCEPTS
ENGAGING TITLE:
ESSENTIAL QUESTION: WHEN IN DOUBT, WILL YOU CALCULATE IT OUT?
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction and the benefits of current mathematical skills used in the plumbing industry. Review of basic math.

Certificate Competencies

- Adds, subtracts, multiplies and divides whole numbers/fractions with and without a calculator.
- Uses a standard ruler and 25' tape measure to measure.

Key Assignments

- Basic math review, plumbing math, PVC pipe installation, and measuring tape. Math practice tests, plumbing math using assignments with hands on projects. Accurate measurements using measuring tape.

Anchor Standards

4.1 Use electronic reference materials to gather information and produce products and services.
4.5 Research past, present, and projected technological advances as they impact a particular Pathway Standards.

Pathway Standards

D2.3 Estimate the materials needed to complete a specific task.
D2.4 Determine the total developed length of the water supply piping system.
D2.6 Calculate the total fixture unit demand from the fixtures indicated on the construction drawings using the tables of the plumbing code.

Common Core Standards

A-CED.11.2.1 Create equations and inequalities in one variable including ones with absolute value and use them to solve problems in and out of context, including equations arising from linear functions.

RESOURCES:

Resources

1. Text
2. Technology
3. Professional Journals

IDEA/THEME: UNIT 6. HAND TOOLS
ENGAGING TITLE:
ESSENTIAL QUESTION: DOES SAFETY HAPPEN BY ACCIDENT?
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction of the use and identification, of plumbing and general construction hand tools. Practical experience and using the right tool for right job.

Certificate Competencies

- Recognizes, selects and uses proper basic hand tools for all jobs. Safely uses basic hand tools in all job procedures.
- Understands the importance of and applies basic maintenance procedures for hand tools.
- Size, material description for pipe identification.

Key Assignments

- ID Plumbing hand tools for copper tubing installation. Hands on identification of "most used" tools in the trade, including specialized tools for copper installations.

Anchor Standards

4.5 Research past, present, and projected technological advances as they impact a particular Pathway Standards.
6.2 Use health and safety practices for storing, cleaning, and maintaining tools, equipment, and supplies.

Pathway Standards

D10.1 Demonstrate techniques for cutting, deburring, and joining metallic and nonmetallic water piping.
D10.3 Perform pressure test of an installed piping system.
D10.7 Install traps and vents as indicated by construction drawings, specifications, and government codes.

Common Core Standards

WS 11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

RESOURCES:

Resources

1. Technology
2. Images
3. Plumbing Code
4. Sales Reps

IDEA/THEME: UNIT 7. POWER TOOLS
ENGAGING TITLE:
ESSENTIAL QUESTION: WORKMAN ALWAYS BLAMES HIS TOOLS.
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction, of safety, and proper use of plumbing and general construction power tools. Practical hands on experience proper maintenance and reviewing of instruction manuals.

Certificate Competencies

- Identifies and uses correct power tools on the job.
- Recognizes and applies appropriate safety guidelines when working with power tools.
- Describes and applies proper procedures for maintaining power tools and equipment.

Key Assignments

- Power tools safety film, SAWZALL, drill practice, and proper maintenance. Hands on assembly electric tool use, demonstrate tool safety.
- Aware of your surroundings

Anchor Standards

Enter Anchor Standards

Pathway Standards

D10.1 Demonstrate techniques for cutting, deburring, and joining metallic and nonmetallic water piping.
D10.3 Perform pressure test of an installed piping system.

Common Core Standards

WS 11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 8. BLUEPRINT READING
ENGAGING TITLE:
ESSENTIAL QUESTION: CAN YOU MEASURE TWICE AND CUT ONCE?
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction of and practical hands on experience in creating construction isometric sketches, understanding of basic plumbing and general construction blueprints.

Certificate Competencies

- Identifies and recognizes basic blueprint terms and symbols.
- Creates isometric drawings.
- Relates information on prints to real parts and locations.
- Interprets information from given site plans.
- Verifies dimensions shown on drawings and generates a Request for Information (RFI) when discrepancies are found.
- Locates plumbing entry points for walls and chases.

Key Assignments

- List blueprint symbols, create isometric sketches, list blueprint dimensions, and copper tube install. Using isometric drawing paper create sketches dimensions, material list for classroom installations.

Anchor Standards

4.1 Use electronic reference materials to gather information and produce products and services.
4.3 Use information and communication technologies to synthesize, summarize, compare, and contrast information from multiple sources.
8.2 Identify local, district, state, and federal regulatory agencies, entities, laws, and regulations related to the Building and Construction Trades Industry Sector.

Pathway Standards

D3.2 Identify and interpret the elements of technical drawings, including plan, elevation, Unit, and detail views.
D3.5 Interpret and scale dimensions from a set of plans using an architect's scale.
D10.3 Perform pressure test of an installed piping system.

Common Core Standards

ETS1.A: Defining and Delimiting an Engineering Problem.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 9. INSTALLING AND TESTING DWV PIPING
ENGAGING TITLE:
ESSENTIAL QUESTION: ALWAYS USE 10' HEAD PRESSURE.
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction of drain, waste, and vent plumbing materials including pipe and fittings. Proper testing for leaks and practical assembly of a drain, waste, and vent plumbing system.

Certificate Competencies

- Demonstrates the ability to install a building sewer system.
- Locates stack within the structure.
- Demonstrates the ability to install a DWV system using appropriate hangers and correct grading.
- Demonstrates testing of a DWV system.

Key Assignments

- Installation of DWV-DRAIN, waste, venting, piping, including proper testing for leaks.

Anchor Standards

10.0 Demonstrate skills necessary to complete a plumbing system in a single-family residence in accordance with accepted industry standards.
10.5 Install and secure proper drainage piping to fixture locations.
10.6 Determine the proper slope for DWV piping using hand levels, laser levels and transits.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D2.3 Estimate the materials needed to complete a specific task.
D2.6 Calculate the total fixture unit demand from the fixtures indicated on the construction drawings using the tables of the plumbing code.
D2.7 Calculate the proper slope for drain, waste and vent (DWV) piping.
D10.5 Install and secure proper drainage piping to fixture locations.
D10.7 Install traps and vents as indicated by construction drawings, specifications, and government codes.

Common Core Standards

SEP 5.	Using mathematics and computational thinking
PS2.C.	Stability and Instability in Physical Systems

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 10. VALVES
ENGAGING TITLE:
ESSENTIAL QUESTION: CAN YOU IDENTIFY AND INSTALL PLUMBING VALVES?
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

- Instruction use of and identification of plumbing valves, hands on practical experience.
- Marking of valves: gas and water

Certificate Competencies

- Identifies and uses basic values.
- Service various types of values.

Key Assignments

- Valves: ID plumbing valves, plumbing code review, and Pex piping install using size, material and Common Core Unit Objectives.
- Method to identify piping, fixings and valves.

Anchor Standards

10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.
10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements and expectations.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D2.3 Estimate the materials needed to complete a specific task.
D2.4 Determine the total developed length of the water supply piping system.
D2.6 Calculate the total fixture unit demand from the fixtures indicated on the construction drawings using the tables of the plumbing code.
D10.7 Install traps and vents as indicated by construction drawings, specifications, and government codes.

Common Core Standards

SEP4. 4. Analyzing and interpreting data

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 11. INSTALLING AND TESTING WATER SUPPLY PIPING
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction of water supply piping using various types of materials and proper installation and testing procedures.

Certificate Competencies

- Uses plans and fixture rough-in-sheets to determine location of fixtures and routes for plumbing.
- Able to properly test a water supply system.
- Develops a material takeoff from a given set of plans.
- Able to locate a water heater and hose bibs.
- Able to install a water distribution system using the appropriate hangers.
- Demonstrates installation of water service including safe sizing to provide for water hammer protection.

Key Assignments

- ID Water pressure fittings, CPVC galvanized Pex copper, and code requirements.
- Water pressure fittings identification, installation of Pex, copper tubing using the uniform plumbing code for rules and proper assembly.

Anchor Standards

10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements and expectation.

Pathway Standards

D1.0 Recognize the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry.
- D1.1 Understand significant historical trends in the construction industry.

D2.0 Apply the appropriate mathematical calculations used in the construction trades.
- D2.3 Estimate the materials needed to complete a specific task.
- D2.4 Determine the total developed length of the water supply piping system.
- D2.6 Calculate the total fixture unit demand from the fixtures indicated on the construction drawings using the tables of the plumbing code.

Common Core Standards

SEP5. Using mathematics and computational thinking.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 12. INSTALLING FIXTURES, VALVES, AND FAUCETS
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction and procedures used in the installation selection, and maintenance of plumbing fixtures.

Certificate Competencies

- Describes and uses the general procedures for installing fixtures.
- Demonstrates the proper installation of valves and faucets.
- Demonstrates the proper procedures for installing water closets.
- Demonstrates the proper procedures for installing lavatories, sinks and pop-up drains.
- Demonstrates the proper procedures for protecting fixtures.
- Handicapped fixture protection

Key Assignments

- Identify plumbing fixtures, plumbing code review. Plumbing fixture review using manufactures plumbing specifications relating to UPC Plumbing Code.

Anchor Standards

- Use electronic reference materials to gather information and produce products and services.

Pathway Standards

D10.9 Install plumbing fixtures.
D10.10 Connect the water supply to faucets and water closets.

Common Core Standards

ETS1.A. Defining and Delimiting an Engineering Problem

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 13. INSTALLING WATER HEATERS
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction in gas-electric, and tank-less water heaters. Proper maintenance and plumbing code requirements.

Certificate Competencies

- Describes the basic operation of water heaters.
- Identifies and explains the functions of basic components of a water heater.
- Properly installs gas and electric water heaters.
- Describes and understands the safety hazards associated with water heaters.
- T&P valves (temperature and pressure relief valve)

Key Assignments

- Water heater video, plumbing code review, and water heater installation, using proper tools, materials, different types of water heaters.
- Legal responsibilities of installations.
- To complete installation with city plumbing permit.

Anchor Standards

10.1 Interpret and explain terminology and practices specific to the Building and Construction Trades Sector.
10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.
10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements and expectations.

Pathway Standards

D1.0 Determine whether an electrical circuit is “live”.
D1.1 Understand significant historical trends in the construction industry.
D1.2 Understand the environmental regulations that influence residential and commercial design.

Common Core Standards

PS4.C. Information Technologies and Instrumentation.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 14. FUEL GAS SYSTEMS
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction of gas components, testing, permit requirements. Hands on installation in gas piping and fittings.

Certificate Competencies

- Identifies the major components of fuel gas systems and the differences between Natural Gas and LPG.
- Identifies and uses safety precautions associated with each type of fuel gas system.
- Makes proper connections for appliances for each type of fuel gas systems.
- Understands and applies local codes to various fuel gas systems.
- Designs, sizes and tests fuel gas systems.

Key Assignments

- Gas fittings, pipe identification, plumbing code review, install gas piping, test for leaks standards, using proper and approved methods per Plumbing Code Book.
- Fletcher coated pipe.

Anchor Standards

10.1 Interpret and explain terminology and practices specific to the Building and Construction Trades Sector.
10.2 Comply with the rules, regulations, and expectations of all aspects of the Building Construction Trades

Pathway Standards

D10.1 Demonstrate techniques for cutting, deburring, and joining metallic and nonmetallic water piping.
D10.3 Perform pressure test of an installed piping system.

Common Core Standards

PS4.C. Information Technologies and Instrumentation.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 15. SERVICING FIXTURES, VALVES, AND FAUCETS
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction in maintenance and installing plumbing valves and faucets. Hands on practical experience.

Certificate Competencies

- Identifies and describes procedures for common repairs and maintenance requirements for fixtures, valves and faucets.
- Identifies and uses proper procedures for repairing and maintaining fixtures, valves and faucets.
- Water pressure regulations.
- Pressure relief valves.

Key Assignments

- Faucet repair, using new and vintage plumbing valves and faucets, hands on repair and installations.

Anchor Standards

10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.
10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements

Pathway Standards

D1.3 Demonstrate knowledge of the California Environmental Quality Act (CEQA) and Environmental Impact Review (EIRs) impacts on residential and commercial construction D9.1 Identify design and energy solutions for improving building energy efficiency.
D10.4 Install fastened in-place fixture valves and shut-off valves as indicated on construction drawings.
D10.8 Install angle stops at water supply stub outs.

Common Core Standards

ETS1.B. Developing Possible Solutions.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 16. PLUMBING THEORIES
ENGAGING TITLE:
ESSENTIAL QUESTION: DO YOU KNOW HOW TO INTERPRET THE PLUMBING CODE?
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Instruction in plumbing theories, related plumbing code, and water closet installation.

Certificate Competencies

- Describes the effects of pressure being applied to water.
- Describes the effects of excessive temperature in a water heater.
- Identifies and uses local plumbing codes directly related to pressure temperature volume.
- Identifies and uses local plumbing code requirements related to pressures, temperature or volume.
- Describes and understands the principles of water closet operations.

Key Assignments

- Task planning process, plumbing code, pex piping installation. Hands on water closet install plus repairs on common fixtures.

Anchor Standards

10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.
10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements and expectations.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D1.2 Understand the environmental regulations that influence residential and commercial design.

Common Core Standards

PS3.B. Conservation of Energy and Energy Transfer

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 17. ON-THE-JOB TASK ORGANIZATION
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: ***Enter total course hours spent on section***

Common Core Unit Objective

Instruction in complete plumbing task organization from beginning to end in job success and productivity.

Certificate Competencies

- Understands and applies positive attitude and how this contributes to overall job success and productivity.
- Understands and uses effective communication skills.
- Understands and applies the relationship of safety and the cost of plumbing work.
- Understands the proper use of company vehicles.
- Describes and uses the task planning process.
- Identifies key questions that should be asked during the task planning process.
- Completes task planning forms for a typical job.

Key Assignments

- Task planning process, plumbing code, plastic piping. Complete price planning for entire plumbing projects including materials, fittings, piping, miscellaneous to complete task, including plumbing code requirements.

Anchor Standards

5.1 Identify and ask significant questions that clarify various points of view to solve problems.

Pathway Standards

D1.1 Understand significant historical trends in the construction industry.
D1.2 Understand the environmental regulations that influence residential and commercial design.
D3.1 Identify the elements used in technical drawings, including types of lines, symbols, details, and views.
D3.7 Understand the sequencing and phases of residential projects.

Common Core Standards

RSLT 11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.

RSLT 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.

RSLT 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.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 18. STORM DRAINAGE SYSTEMS
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: 4 HOURS

Common Core Unit Objective

Enter Common Core Unit Objectives

Certificate Competencies

Key Assignments

- Assembly of common storm drain components.

Anchor Standards

10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.
10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements and expectations.

Pathway Standards

D2.0 Apply the appropriate mathematical calculations used in the construction trades.

Common Core Standards

LS 11-12.6.	Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
RSIT11-12.7. 11-12.7.	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

RESOURCES:

Resources

Resources

IDEA/THEME: UNIT 19. VENTS
ENGAGING TITLE:
ESSENTIAL QUESTION: ***Enter Essential Question***
INSTRUCTIONAL HOURS: ***Enter total course hours spent on section***

Common Core Unit Objective

Instruction of the use, installation, testing, sizing, code requirements for plumbing vents. Practical, hands on experience.

Certificate Competencies

- Explains and understands the general requirements for applications of vents.
- Understands the use of vents in plumbing systems.
- Identifies and explains the sizing requirements for the special kinds of vents used in plumbing.
- Explains the sizing requirements for individual vents, common vents and combined waste and wet vent installations.
- Explains the general considerations for vent sizing which apply to any system.

Key Assignments

- Installation and identification of plumbing vents. Testing procedures.

Anchor Standards

10.1 Interpret and explain terminology and practices specific to the Building and Construction Trades Sector.
10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades Sector.
10.3 Construct projects and products specific to the Building and Construction Trades Sector requirements and expectations.

Pathway Standards

D2.7 Calculate the proper slope for drain, waste and vent (DWV) piping.
D9.0 Understand, integrate, and employ sustainable construction practices in the building trades.
D10.3 Perform pressure test of an installed piping system.
D10.7 Install traps and vents as indicated by construction drawings, specifications, and government codes.

Common Core Standards

ETSI. Engineering Design

RESOURCES:

Resources

Resources