



8876

INTRODUCTION TO
PLUMBING AND PIPE
TRADES (10)

20S/20E/20M

A Plumbing and Pipe Trades Course

8876 INTRODUCTION TO PLUMBING AND PIPE TRADES 20S/20E/20M

Course Description

A student wanting to develop skills in plumbing and the pipe trades must have knowledge of the basic principles related to piping systems and service. Students learn about safety, tools and equipment, piping systems, and service procedures, and they are introduced to diagnosis strategies.

Goal 1: Describe and apply **health and safety** practices.

GLO 1.1: Describe and apply health and safety practices.

- SLO 10.1.1.1 Identify safety and health requirements. (A1a.1)
- overview of *The Workplace Safety and Health Act*
 - rights and responsibilities of employees under the *Act*
 - rights and responsibilities of employers under the *Act*
 - rights and responsibilities of supervisors under the *Act*
 - fourteen (14) regulations
 - codes of practice
 - guidelines
 - right to refuse
 - explanation of right to refuse process
 - rights and responsibilities of employees
 - rights and responsibilities of employers
 - rights and responsibilities of supervisors under the *Act*
- SLO 10.1.1.2 Identify personal protective equipment (PPE) and procedures. (A1a.2)
- employer and employee responsibilities as related to personal protective equipment
 - standards: ANSI (U.S.A. standards), etc.
 - work protective clothing and danger if it fits poorly
 - gloves—importance of proper glove selection (when handling chemicals, cold items, slivers, etc.)

- headwear—appropriate protective headwear when required and the approved type of headwear
- eye protection—comparison and distinction of everyday eyeglasses, industrial safety glasses and safety goggles
- foot protection—when required according to safety standards
- hearing protection
 - hazards of various noise levels (hearing protection must be worn)
 - laws
 - types of hearing protection
- respiratory protection—types, overview of proper selection
- fall protection—Manitoba requirements standards guidelines
 - ANSI (U.S.A. standards), etc.
- ladders and scaffolding
- safety principles for working with or around industrial trucks site-specific (forklifts, pallet trucks, etc.)

SLO 10.1.1.3 Identify workplace regulations. (A1a.3)

- the care and cleanliness in the working area
- the safe use of chemicals
- the use of scaffolding, and
- the use of ladders and related equipment

SLO 10.1.1.4 Identify ergonomics. (A1a.4)

- definition of ergonomics and conditions that may affect the body
 - working postures
 - repetition
 - force
 - lifting
 - tools
 - identify tool and safety equipment
 - causes of hand tool accidents
 - equipment

- SLO 10.1.1.5 Demonstrate an understanding of the principles of hazard recognition and control. (A1a.5)
- HPA and HPR (*Hazardous Products Act and Hazardous Products Regulations*)
 - safe work practices
 - basic risk assessment
 - injury prevention and control measures
 - identification of hazards involved in pneumatic tool use and explanation of how to guard against them
 - refrigerants
 - toxic chemical (non-refrigerant)
 - high pressure fluids
- SLO 10.1.1.6 Demonstrate an understanding of the hazards of confined space entry. (A1a.6)
- identification of a confined space
 - hazards of a confined space (including physical and biological hazards)
 - working in a confined space
 - emergency response plan
 - self-contained breathing apparatus (SCBA)
- SLO 10.1.1.7 Identify first aid/CPR. (A1a.7)
- overview of first-aid regulation
 - obligations of employers regarding first aid
 - Who is certified to provide first aid?
 - What to do while waiting for help?
 - Where is the first aid kit located?
 - describe basic first-aid requirements and techniques
 - scope and limits of first-aid intervention
 - specific interventions (cuts, burns, abrasions, fractures, suffocation, shock, electrical shock, etc.)
 - interface with other services and agencies (e.g., Workers Compensation claims)
 - describe basic CPR requirements and techniques
 - How do you get certified?
 - scope and limits of CPR intervention (include varieties of CPR certification)

- SLO 10.1.1.8 Identify safety requirements as they apply to WHMIS, with emphasis on the topics found in *Apprenticeship Level 1 Technical Training*. (A1a.8)
- WHMIS 1988 vs 2015 as system. What is same and what has changed? What is GHS?
 - provincial regulation under the *Safety and Health Act*
 - each province has a WHMIS regulation
 - Federal *Hazardous Products Act*
 - WHMIS generic training:
 - WHMIS defined and the format used to convey information about hazardous materials in the workplace
 - information found on supplier and workplace labeling using WHMIS
 - hazardous materials in accordance with WHMIS
 - compliance with government safety standards and regulations
 - description of WHMIS (include varieties of WHMIS Certification)
 - typology of WHMIS labels, symbols, and classifications
 - scope and use of Materials/Safety Data Sheets (M/SDS)
- SLO 10.1.1.9 Demonstrate the ability to identify and control hazards. (A1a.9)
- basic control measures (injury prevention)
 - safe work procedures
 - explanation on the importance of industrial housekeeping
 - employer responsibilities
 - how and where to store materials
 - safety measures related to walkways, stairs and floor openings
 - explanation of how to protect the worker and others when working in traffic paths
- SLO 10.1.1.10 Describe and discuss the safe storage of stock equipment in service vehicles and transportation of dangerous goods. (A1a.10)

- SLO 10.1.1.11 Describe asbestos safety and health requirements. (A1a.11)
- describe what asbestos is, and why it has been used so much
 - describe the potential health hazards associated with asbestos
 - identify typical products and materials that contain asbestos
 - describe proper precautions and work practices when working around asbestos
 - describe how to recognize asbestos hazards due to damage or deterioration
 - describe appropriate response to an asbestos fiber release
 - describe what Workplace Safety and Health regulations, guidelines, and bulletins apply to workers who work with or work around asbestos and what aspects of those regulations, guidelines, and bulletins affect you or your company
- SLO 10.1.1.12 Review the amendments to *The Workplace Safety and Health Regulation* to meet harmonization recommendations of the Occupational Safety and Health of the Canadian Association of Administrators of Labour Legislation, a cross- jurisdictional advisory and consultative body respecting shared issues relating to occupational safety and health. (A1a.12)
- updating first-aid kits and first-aid certifications in accordance with newly developed
 - Canadian Standards Association standards as part of a national system for workplace first aid
 - extending baseline hearing test requirements from within 70 days of hire to up to six months and replace annual hearing reports with requirements to report every two years
 - clarifying existing requirements for the provision and use of several types of personal protective equipment, including high-visibility safety apparel, hearing protection, life jackets and personal flotation devices
 - ensuring a secondary air supply is carried on the person or within arm's reach for workers working in dangerous atmospheres
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GLO 1.2: Demonstrate an understanding of the *Trade Safety Awareness Curriculum for Level 1 Apprentices*.

- SLO 10.1.2.1 Explain the importance of trade safety and health in reducing injuries and fatalities to young employees in Manitoba. (TSA 1)
 - SLO 10.1.2.2 Describe the rights and responsibilities of employees, employers, and supervisors under the Workplace Safety and Health Act. (TSA 2)
 - SLO 10.1.2.3 Describe the steps to use in the Right to Refuse process. (TSA 3)
 - SLO 10.1.2.4 Explain how and where to find information on workplace safety and health. (TSA 4)
 - SLO 10.1.2.5 Demonstrate how to handle a potentially dangerous work situation. (TSA 5)
 - SLO 10.1.2.6 Explain the S.A.F.E. acronym. (TSA 6)
 - SLO 10.1.2.7 Define workplace safety and health hazards. (TSA 7)
 - SLO 10.1.2.8 Give examples of trade-specific workplace safety and health hazards. (TSA 8)
 - SLO 10.1.2.9 Give examples of five types of safety and health hazards. (TSA 9)
 - SLO 10.1.2.10 Define workplace safety and health risk. (TSA 10)
 - SLO 10.1.2.11 Give examples of trade-specific workplace safety and health risks. (TSA 11)
 - SLO 10.1.2.12 Explain the principles of hazard recognition and control as they apply to the specific trade. (TSA 12)
 - SLO 10.1.2.13 Explain the Workplace Hazardous Material Information System (WHMIS). (TSA 13)
 - SLO 10.1.2.14 Match the WHMIS symbols and their meanings. (TSA 14)
 - SLO 10.1.2.15 Describe the importance of the Material Safety Data Sheets (MSDS). (TSA 15)
 - SLO 10.1.2.16 Describe the importance of using PPE. (TSA 16)
 - SLO 10.1.2.17 Demonstrate proper selection and use of a variety of PPE and fall protection systems. (TSA 17)
 - SLO 10.1.2.18 Outline the safety principles for working on and around electrical equipment. (TSA 18)
 - SLO 10.1.2.19 Outline workplace fire safety principles. (TSA 19)
 - SLO 10.1.2.20 Identify the hazards in confined spaces and the preparation needed to work in a confined space. (TSA 20)
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Goal 2: Demonstrate the **use and management of equipment, tools, and materials**, including those used in **fuel brazing and cutting**.

GLO 2.1: Demonstrate the **use and management of equipment and tools**.

- SLO 10.2.1.1 Describe the use, selection, and maintenance of safety gear and PPE by plumbers. (A2a.1)
 - SLO 10.2.1.2 Demonstrate basic techniques for the use, selection, and maintenance of safety gear and PPE by plumbers. (A2a.2)
 - SLO 10.2.1.3 Describe the use, selection, and maintenance of hand tools by plumbers. (A2a.3)
 - SLO 10.2.1.4 Demonstrate basic techniques for hand-tool selection, use, and maintenance. (A2a.4)
 - SLO 10.2.1.5 Describe the selection, use, and maintenance of power tools and equipment. (A2a.5)
 - SLO 10.2.1.6 Demonstrate basic techniques for the selection, use, and maintenance of power tools and equipment. (A2a.6)
 - SLO 10.2.1.7 Describe the selection, use, and maintenance of soldering tools and equipment. (A2a.9)
 - SLO 10.2.1.8 Demonstrate basic techniques for the selection, use, and maintenance of soldering tools and equipment. (A2a.10)
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GLO 2.2: Demonstrate the use and management of **fuel brazing and cutting equipment and tools**.

No applicable SLOs.

Goal 3: Demonstrate an understanding of the **properties and applications** of various types of **pipng and tubing**.

GLO 3.1: Demonstrate an understanding of the **properties and applications** of **pipng and tubing**.

No applicable SLOs.

GLO 3.2: Demonstrate an understanding of the **properties and applications** of **plastic piping**.

- SLO 10.3.2.1 Define terminology associated with plastic piping. (A5aPlastic.1)
- SLO 10.3.2.2 Identify hazards and describe safe work practices pertaining to plastic piping. (A5aPlastic.2)
- SLO 10.3.2.3 Interpret codes and regulations pertaining to plastic piping. (A5aPlastic.3)
- SLO 10.3.2.4 Interpret information pertaining to plastic piping found on drawings and specifications. (A5aPlastic.4)
- SLO 10.3.2.5 Describe the identification systems and methods for plastic piping. (A5aPlastic.5)
- SLO 10.3.2.6 Identify tools and equipment related to plastic piping and describe their applications and procedures for use. (A5aPlastic.6)
- SLO 10.3.2.7 Identify plastic piping systems and describe their characteristics and applications. (A5aPlastic.7)
- SLO 10.3.2.8 Identify types of plastic piping and describe their properties and characteristics. (A5aPlastic.8)
 - thermoset
 - thermoplastic
- SLO 10.3.2.9 Identify fittings used with plastic piping and describe their purpose and applications. (A5aPlastic.9)
- SLO 10.3.2.10 Identify plastic piping accessories and describe their purpose and applications. (A5aPlastic.10)
 - supports
 - hangers
 - sleeves
- SLO 10.3.2.11 Explain the systems of measurement for plastic piping. (A5aPlastic.11)
 - dimension
 - length
 - wall thickness/schedule
- SLO 10.3.2.12 Describe the procedures used to measure plastic piping. (A5aPlastic.12)

- SLO 10.3.2.13 Perform calculations to determine plastic piping measurements. (A5aPlastic.13)
- run and branch
 - fitting allowances
 - offsets
- SLO 10.3.2.14 Describe the procedures used to inspect plastic piping. (A5aPlastic.14)
- SLO 10.3.2.15 Identify the methods used to cut plastic piping and describe their associated procedures. (A5aPlastic.15)
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GLO 3.3: Demonstrate an understanding of the **properties and applications of **copper tubes and tubing**.**

- SLO 10.3.3.1 Define terminology associated with copper tubes and tubing. (A5aCopper.1)
- SLO 10.3.3.2 Identify hazards and describe safe work practices pertaining to copper tubes and tubing. (A5aCopper.2)
- SLO 10.3.3.3 Demonstrate ability to interpret codes and regulations pertaining to copper tubes and tubing. (A5aCopper.3)
- SLO 10.3.3.4 Interpret information pertaining to copper tubes and tubing found on drawings and specifications. (A5aCopper.4)
- SLO 10.3.3.5 Describe the identification systems and methods for copper tubes and tubing. (A5aCopper.5)
- SLO 10.3.3.6 Identify tools and equipment related to copper tubes and tubing, and describe their applications and procedures for use. (A5aCopper.6)
- SLO 10.3.3.7 Identify copper tubes and tubing systems, and describe their characteristics and applications. (A5aCopper.7)
- SLO 10.3.3.8 Identify types of copper tubes and tubing, and describe their properties and characteristics. (A5aCopper.8)
- SLO 10.3.3.9 Identify fittings used with copper tubes and tubing, and describe their purpose and applications. (A5aCopper.9)
- SLO 10.3.3.10 Identify copper tubes and tubing accessories, and describe their purpose and applications. (A5aCopper.10)
- supports
 - hangers
 - sleeves

- SLO 10.3.3.11 Explain the systems of measurement for copper tubes and tubing. (A5aCopper.11)
- dimension
 - length
 - wall thickness/schedule
- SLO 10.3.3.12 Describe the procedures used to measure copper tubes and tubing. (A5aCopper.12)
- SLO 10.3.3.13 Perform calculations to determine copper tubes and tubing measurements. (A5aCopper.13)
- run and branch
 - fitting allowances
 - offsets
- SLO 10.3.3.14 Describe the procedures used to inspect copper tubes and tubing. (A5aCopper.14)
- SLO 10.3.3.15 Identify the methods used to cut copper tubes and tubing, and describe their associated procedures. (A5aCopper.15)
- SLO 10.3.3.16 Describe the procedures used to bend copper tubes and tubing. (A5aCopper.16)
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GLO 3.4: Demonstrate an understanding of the **properties and applications of **steel piping**.**

- SLO 10.3.4.1 Define terminology associated with steel piping. (A5aSteel.1)
- SLO 10.3.4.2 Identify hazards and describe safe work practices pertaining to steel piping. (A5aSteel.2)
- SLO 10.3.4.3 Interpret codes and regulations pertaining to steel piping. (A5aSteel.3)
- SLO 10.3.4.4 Interpret information pertaining to steel piping found on drawings and specifications. (A5aSteel.4)
- SLO 10.3.4.5 Describe the identification systems and methods for steel piping. (A5aSteel.5)
- SLO 10.3.4.6 Identify tools and equipment related to steel piping, and describe their applications and procedures for use. (A5aSteel.6)
- SLO 10.3.4.7 Identify steel piping systems and describe their characteristics and applications. (A5aSteel.7)

- SLO 10.3.4.8 Identify types of steel piping and describe their properties and characteristics. (A5aSteel.8)
- carbon steel
 - galvanized
 - stainless steel
- SLO 10.3.4.9 Identify fittings used with steel piping and describe their purpose and applications. (A5aSteel.9)
- SLO 10.3.4.10 Identify steel piping accessories and describe their purpose and applications. (A5aSteel.10)
- supports
 - hangers
 - sleeves
- SLO 10.3.4.11 Explain the systems of measurement for steel piping. (A5aSteel.11)
- dimension
 - length
 - wall thickness/schedule
 - grades
- SLO 10.3.4.12 Describe the procedures used to measure steel piping. (A5aSteel.12)
- SLO 10.3.4.13 Perform calculations to determine steel piping measurements. (A5aSteel.13)
- run and branch
 - fitting allowances
 - offsets
- SLO 10.3.4.14 Describe the procedures used to inspect steel piping. (A5aSteel.14)
- quality control requirements
- SLO 10.3.4.15 Identify the methods used to cut steel piping and describe their associated procedures. (A5aSteel.15)
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GLO 3.5: Demonstrate an understanding of the properties and applications of cast iron piping.

- SLO 10.3.5.1 Define terminology associated with cast iron. (A5aCast.1)
- SLO 10.3.5.2 Identify hazards and describe safe work practices pertaining to cast iron. (A5aCast.2)
- SLO 10.3.5.3 Interpret codes and regulations pertaining to cast iron. (A5aCast.3)

- SLO 10.3.5.4 Interpret information pertaining to cast iron found on drawings and specifications. (A5aCast.4)
- SLO 10.3.5.5 Describe the identification systems and methods for cast iron. (A5aCast.5)
- SLO 10.3.5.6 Identify tools and equipment related to cast iron, and describe their applications and procedures for use. (A5aCast.6)
- SLO 10.3.5.7 Identify cast iron systems and describe their characteristics and applications. (A5aCast.7)
- SLO 10.3.5.8 Identify types of cast iron and describe their properties and characteristics. (A5aCast.8)
- soil
 - ductile
 - duriron
- SLO 10.3.5.9 Identify fittings used with cast iron and describe their purpose and applications. (A5aCast.9)
- SLO 10.3.5.10 Identify cast iron accessories and describe their purpose and applications. (A5aCast.10)
- supports
 - hangars
 - sleeves
- SLO 10.3.5.11 Explain the systems of measurement for cast iron. (A5aCast.11)
- dimension
 - length
 - wall thickness/schedule
- SLO 10.3.5.12 Describe the procedures used to measure cast iron. (A5aCast.12)
- SLO 10.3.5.13 Perform calculations to determine cast iron measurements. (A5aCast.13)
- run and branch
 - fitting allowances
 - offsets
- SLO 10.3.5.14 Describe the procedures used to inspect cast iron. (A5aCast.14)
- SLO 10.3.5.15 Identify the methods used to cut cast iron and describe their associated procedures. (A5aCast.15)
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GLO 3.6: Demonstrate an understanding of the **properties and applications** of **glass piping**.

No applicable SLOs.

GLO 3.7: Demonstrate an understanding of the **properties and applications** of **asbestos-cement piping**.

No applicable SLOs.

Goal 4: Demonstrate an understanding of the **properties and applications of various materials (other than piping and tubing)** used in plumbing and the pipe trades.

GLO 4.1: Demonstrate an understanding the **properties and applications of various materials (other than piping and tubing)** used in plumbing and the pipe trades.

No applicable SLOs.

Goal 5: Demonstrate an understanding of the **design and layout of piping systems**.

GLO 5.1: Demonstrate an understanding of the **design and layout of piping systems**.

No applicable SLOs.

Goal 6: Demonstrate an understanding of the **joining, fabrication, and installation** of piping systems, including **hoisting, lifting, and rigging, and access equipment**.

GLO 6.1: Demonstrate an understanding of the **joining and fabrication** of piping systems.

No applicable SLOs.

GLO 6.2: Demonstrate an understanding of the **installation** of piping systems.

No applicable SLOs.

GLO 6.3: Demonstrate an understanding of **hoisting, lifting, and rigging**.

No applicable SLOs.

GLO 6.4: Demonstrate an understanding of **access equipment**.

No applicable SLOs.

Goal 7: Demonstrate an understanding of the **documentation and testing** of piping systems.

No applicable SLOs.

Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills as they pertain to plumbing and the pipe trades.

GLO 8.1: Read, interpret, and communicate **information**.

No applicable SLOs.

GLO 8.2: Apply knowledge and skills from **mathematics**.

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| SLO 10.8.2.1 | Identify and describe metric (SI) and imperial weights and measures, decimals and fractions, terms, prefixes, and relationships. (A8a.1) |
| SLO 10.8.2.2 | Identify and describe formulas and formula transposition. (A8a.2) |
| SLO 10.8.2.3 | Identify and describe the square root, perimeter, and circumference. (A8a.3) |
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GLO 8.3: Apply knowledge and skills from the **sciences**.

No applicable SLOs.

GLO 8.4: Apply knowledge and skills from **information and communication technology**.

No applicable SLOs.

Goal 9: Demonstrate an understanding of the **structure and scope** of plumbing and the pipe trades.

GLO 9.1: **Demonstrate an understanding of the structure and scope of plumbing and the pipe trades, as well as associated occupations.**

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| SLO 10.9.1.1 | Describe the structure and scope of the plumbing trade. (A3b.1) <ul style="list-style-type: none">■ <i>The Apprenticeship and Certification Act</i><ul style="list-style-type: none">– Apprenticeship and Certification Board and Provincial Advisory Committees– general and specific trade regulation– policies regarding attendance, evaluation procedures, conduct, and progression requirements (Apprenticeship Manitoba, Training provider) |
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- uses of the Red Seal Occupational Standards (RSOS)
 - technical training in-school curriculum
 - on-the-job record book of hours (Manitoba blue book)
 - examinations (level placement tests, final certification examinations)
 - opportunities and future career options
 - generalists and specialists (The move toward specialization is well known to modern tradespeople. Some prefer to specialize and others want to do it all. Supervisory positions require a broad scope.)
 - lead hands and other immediate supervisors (Apprentices need to know how to become a lead-hand as much as they need to know the benefits and pit-falls of leadership between management and shop floor workers.)
 - geographic mobility (What does it mean to a construction/industrial worker to have to travel to find work? Are there more opportunities if they do? What are they? What are the draw-backs and benefits to being away from home for several weeks at a time?)
 - job hierarchies and innovations (What trade specific special training opportunities are available in your trade? Is there travel involved? Is there an opportunity to move up the ladder on a work crew as opposed to staying in the shop?)
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GLO 9.2: Demonstrate an understanding of **training and employment opportunities** in plumbing and the pipe trades, as well as in associated occupations.

- SLO 10.9.2.1 Demonstrate an awareness of apprenticeship and the reason why trades use this system.
 - SLO 10.9.2.2 Demonstrate an awareness of the benefits of Red Seal certification, including the opportunities to work in other provinces.
 - SLO 10.9.2.3 Demonstrate an awareness of the regulating bodies that oversee plumbing and pipefitting.
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Goal 10: Demonstrate an awareness of **sustainability** as it pertains to plumbing and the pipe trades.

GLO 10.1: Describe the impact of **human sustainability** on the health and well-being of plumbers, tradespersons working in the pipe trades, and those who use the systems they construct.

SLO 10.10.1.1 Demonstrate an awareness of sustainability as it relates to human health and well-being.

SLO 10.10.1.2 Demonstrate an awareness of the long-term health concerns related to the different materials used in plumbing and the pipe trades.

SLO 10.10.1.3 Demonstrate an awareness of the necessity of plumbing in a modern society.

GLO 10.2: Describe plumbing and the pipe trades' **sustainability practices** and **impact on the environment**.

SLO 10.10.2.1 Demonstrate an awareness of environmental sustainability as it pertains to plumbing and the pipe trades.

SLO 10.10.2.2 Demonstrate an awareness of the environmental benefits of modern plumbing and sewage disposal systems.

GLO 10.3: Describe **sustainable business practices** within plumbing and the pipe trades.

SLO 10.10.3.1 Demonstrate an awareness of business practices and the difference between those that are sustainable and those that are not.

Goal 11: Demonstrate an awareness of the **ethical and legal standards, including codes**, as they pertain to plumbing and the pipe trades.

GLO 11.1: Demonstrate an understanding of **ethical and legal standards**.

SLO 10.11.1.1 Exhibit positive ethics by demonstrating quality workmanship.

SLO 10.11.1.2 Demonstrate an awareness of ethical and legal standards.

SLO 10.11.1.3 Demonstrate an awareness of building codes and their purpose.

Goal 12: Demonstrate **employability skills**.

GLO 12.1: Demonstrate fundamental **employability skills**.

- SLO 10.12.1.1 Demonstrate regular and punctual attendance.
 - SLO 10.12.1.2 Communicate respectfully and effectively with teachers, supervisors, co-workers, and students.
 - SLO 10.12.1.3 Demonstrate problem-solving skills.
 - SLO 10.12.1.4 Demonstrate critical-thinking skills.
 - SLO 10.12.1.5 Demonstrate the ability to accept and follow direction and feedback.
 - SLO 10.12.1.6 Demonstrate teamwork skills.
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GLO 12.2: Demonstrate an understanding of the **business operations** of a plumbing and pipe trades organization.

- SLO 10.12.2.1 Demonstrate an awareness of some of the factors that are required for the effective business operation of a plumbing and pipe trades facility.
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Goal 13: Demonstrate an awareness of the **history, technological progression, and emerging trends** in plumbing and the pipe trades.

GLO 13.1: Demonstrate an awareness of the **history, technological progression, and emerging trends** in plumbing and the pipe trades.

No applicable SLOs.
