



8879

INSTALLATION OF
PLUMBING AND PIPING
SYSTEMS II (11C)

30S/30E/30M

A Plumbing and Pipe Trades Course

8879 INSTALLATION OF PLUMBING AND PIPING SYSTEMS II 30S/30E/30M

Course Description

A student wanting to develop skills in plumbing and the pipe trades must have knowledge of the basic principles of fixture installation and the calculations necessary to properly place and select those fixtures. The student will develop an understanding of the different methods that can be used to install systems and when to choose one over another.

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

GLO 1.1: Describe and apply health and safety practices.

SLO 11C.1.1.1 Demonstrate an understanding of, and adherence to, health and safety practices.

GLO 1.2: Demonstrate an understanding of the ***Trade Safety Awareness Curriculum for Level 1 Apprentices***.

No applicable SLOs.

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**.

No applicable SLOs.

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**.

No applicable SLOs.

GLO 3.3: Demonstrate an understanding of the **properties and applications** of **copper tubes and tubing**.

No applicable SLOs.

GLO 3.4: Demonstrate an understanding of the **properties and applications** of **steel piping**.

No applicable SLOs.

GLO 3.5: Demonstrate an understanding of the **properties and applications** of **cast iron piping**.

No applicable SLOs.

GLO 3.6: Demonstrate an understanding of the **properties and applications** of **glass piping**.

- SLO 11C.3.6.1 Define terminology associated with glass piping. (A5aGlass.1)
- SLO 11C.3.6.2 Identify hazards and describe safe work practices pertaining to glass piping. (A5aGlass.2)
- SLO 11C.3.6.3 Interpret codes and regulations pertaining to glass piping. (A5aGlass.3)
- SLO 11C.3.6.4 Interpret information pertaining to glass piping found on drawings and specifications. (A5aGlass.4)
- SLO 11C.3.6.5 Describe the identification systems and methods for glass piping. (A5aGlass.5)
- SLO 11C.3.6.6 Identify tools and equipment related to glass piping, and describe their applications and procedures for use. (A5aGlass.6)
- SLO 11C.3.6.7 Identify glass piping systems and describe their characteristics and applications. (A5aGlass.7)
- SLO 11C.3.6.8 Identify types of glass piping and describe their properties and characteristics. (A5aGlass.8)
 - soil
 - ductile
 - duriron
- SLO 11C.3.6.9 Identify fittings used with glass piping and describe their purpose and applications. (A5aGlass.9)

- SLO 11C.3.6.10 Identify glass piping accessories and describe their purpose and applications. (A5aGlass.10)
- supports
 - hangers
 - sleeves
- SLO 11C.3.6.11 Explain the systems of measurement for glass piping. (A5aGlass.11)
- dimension
 - length
 - wall thickness/schedule
- SLO 11C.3.6.12 Describe the procedures used to measure glass piping. (A5aGlass.12)
- SLO 11C.3.6.13 Perform calculations to determine glass piping measurements. (A5aGlass.13)
- run and branch
 - fitting allowances
 - offsets
- SLO 11C.3.6.14 Describe the procedures used to inspect glass piping. (A5aGlass.14)
- SLO 11C.3.6.15 Identify the methods used to cut glass piping and describe their associated procedures. (A5aGlass.15)
- SLO 11C.3.6.16 Identify the methods used to join glass piping and describe their associated procedures. (A5aGlass.16)
- bead end to bead end
 - bead end to plain end
 - plain end to plain end
- SLO 11C.3.6.17 Describe the procedures used to install fittings and accessories for glass piping. (A5aGlass.17)
- SLO 11C.3.6.18 The apprentice-learner will perform procedures used to install fittings and accessories for glass piping on the job. (Glass Practical A6a.1)
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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.**

SLO 11C.5.1.1 Demonstrate basic plumber and gas layout drawings.
(A3c.13)

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**.

No applicable SLOs.

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.**

No applicable SLOs.

GLO 9.2: Demonstrate an understanding of **training and employment opportunities** in plumbing and the pipe trades, as well as in associated occupations.

SLO 11C.9.2.1 Demonstrate an awareness of training opportunities available to tradespeople.

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 11C.10.1.1 Demonstrate an awareness of the sustainable factors that influence human health and well-being for plumbers and pipe trade workers.

SLO 11C.10.1.2 Demonstrate an awareness of the long-term health concerns related to plumbing and the pipe trades.

SLO 11C.10.1.3 Demonstrate an awareness of the sustainability of plumbers' working conditions; explain working hours, out-of-town travel, and shift work

SLO 11C.10.1.4 Demonstrate an awareness of the sustainability of plumbers' working conditions; explain working hours, out-of-town travel, and shift work.

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

SLO 11C.10.2.1 Demonstrate an awareness of the benefits of environmentally appropriate fixtures, such as low-flush toilets.

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

SLO 11C.10.3.1 Demonstrate an awareness of the relationship between working conditions and employee retention.

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 11C.11.1.1 Exhibit positive ethics by demonstrating quality workmanship.

SLO 11C.11.1.2 Demonstrate an awareness of hydrostatic and pneumatic testing and inspections.

Goal 12: Demonstrate **employability skills**.

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

SLO 11C.12.1.1 Demonstrate regular and punctual attendance.

SLO 11C.12.1.2 Communicate respectfully and effectively with teachers, supervisors, co-workers, and students.

SLO 11C.12.1.3 Demonstrate problem-solving skills.

SLO 11C.12.1.4 Demonstrate critical-thinking skills.

SLO 11C.12.1.5 Demonstrate the ability to accept and follow direction and feedback.

SLO 11C.12.1.6 Demonstrate teamwork skills.

GLO 12.2: Demonstrate an understanding of the **business operations** of a plumbing and pipe trades organization.

SLO 11C.12.2.1 Demonstrate an awareness of the effect of wasting materials on the business operation of a plumbing and pipe trades facility.

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.

SLO 11C.13.1.1 Demonstrate an awareness of the history, technological progression, and emerging trends in plumbing fixtures.
