

## Appendix A.1

This schedule is attached to and a part of these Standards for the above identified occupation.

Time-based

Competency-based

Hybrid

The term of the apprenticeship is approximately 4 years with an OJL attainment of 8000 hours, supplemented by the minimum required 576 hours of related instruction. (Note: The competency-based training approach does not require hours.)

The apprentice to journey worker (trainer/mentor/professional) ratio is: 2 Apprentice(s)q0.00000912 0 6







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- *Identify job site hazards - work specific to plumbers*
  - *Learn how to maintain your workplace safely*
  - *Understand OSHA's involvement in the plumbing profession*
  - *Understand how the cost of accidents and illnesses effect everyone on a job site*
  - *Identify how to properly lift heavy objects to avoid injury*
  - *Identify the proper procedures to safely work on and around ladders*
  - *Identify the different types of fires and the proper extinguisher to use for each type*
  - *Identify the types of personal protective equipment needed in the plumbing profession and when each type is required*
  - *Understand how to work safely in and around a trench*
  - *Understand the lock out/ tag out procedure*
  - *Understand how to properly work in and around a confined space*

*Introduction into Hand Tools used in the Plumbing Profession - 6 hours*

- *Levels*
- *Tape Measure*
- *Screw Drivers*
- *Wrenches*
- *Plastic Pipe Cutter*
- *Saws*
- *Pliers*
- *Torch regulator assembly*

*Objectives:*

- *Identify the types of hand tools used in the plumbing profession*
- *Learn how to properly use and care for basic hand tools*
- *Visually inspect hand tools to determine if they are safe to use*
- *Identify the types of personal protective equipment required to be used with hand tools*

*Introduction into Power Tools used in the Plumbing Profession - 6 hours*

- *Power Drills*
- *Drill Bits*
- *Power Saws*
- *Air Compressor*
- *Pneumatic Tools*
- *Jack Hammers*

*Objectives:*

- *Identify the types of power tools used in the plumbing profession*
- *Learn how to properly use and care for basic power tools*
- *Identify which drill or saw is used relevant to the work location*
- *Identify which drill bit or saw blade is used relevant to a system installation*
- *Visually inspect power tools to determine if they are safe to use*
- *Identify the types of personal protective equipment required to be used with power tools*

*Identification of All Plumbing Fittings and Types of Pipe - 6 hours*

*Objectives:*

- *Identify and describe the various fittings used in the plumbing profession*









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- *Identify repairs for commercial fixtures.*

*The Uniform Plumbing Code (UPC) - 63 Hours*

- *General Regulations*
- *Plumbing Fixtures and Fixture Fittings*
- *Water Heaters*
- *Water Supply and Distribution*
- *Sanitary Drainage*
- *Building Sewers*
- *Indirect Wastes*
- *Vents*
- *Traps and Interceptors*
- *Storm Drainage*
- *Fuel Piping*
- *Fire Stop Protection*

*Objectives:*

- *Identify proper code terminology.*
- *Identify general plumbing requirements for hanging and securing piping.*
- *Identify plumbing fixtures.*
- *Perform water heater sizing, combustion air calculations, vent*878 667631 TJET@11

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- *Identify the necessary requirements and locations to properly install the plumbing fixtures and plumbing appurtenances*
  - *Identify the reasons for coordination of trades on the job site*

*ADA Guidelines - 8 hours*

- *ADA Guidelines related to plumbing*

*Objectives:*

- *Identify and describe the necessary requirements to plumb according to ADA standards*

*Applied Mathematics - 17 Hours*

- *Jumper Offsets*
- *Offsets in Parallel*
- *Rolling Offsets*
- *Cast Iron Assemblies with Various Bends*
- *Review of Area and Volume*

*Objectives:*

- *Determine center-to-center and end-to-end lengths for parallel offsets.*
- *Calculate the travel for a rolling offset. 4.1.3 Solve for end-to-end lengths of pipe.*
- *Calculate area, water volumes, weights, and gallons for various geometric shapes.*
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- Vents
  - Traps and Interceptors
  - Storm Drainage
  - Fuel Piping
  - Fire Stop Protection

*Objectives:*

- Identify the codes pertaining to the above list from the Uniform Plumbing Code
- Describe Idaho Law administrative and enforcement rules
- Explain when the general regulations apply to various parts of the plumbing system (water, drainage, venting, etc.)
- Describe how plumbing fixtures are roughed-in and installed
- Explain the rules governing installation of water heaters
- Perform water pipe sizing exercises
- Describe the code requirements for the installation of water supply and distribution systems (materials, joints, connections, sizing, etc)
- Explain when and what type of backflow prevention devices, assemblies, and methods are required
- Describe the code requirements for the installation of drain and waste systems (materials, joints, connections, sizing, etc)
- Perform drain and waste pipe sizing exercises
- Describe the code requirements for the installation of public and private building sewers
- Identify and install an indirect waste system in a lab.
- Describe the code requirements for the installation of the vent systems (materials, joints, connections, sizing, etc)
- Perform vent pipe sizing exercises
- Describe where traps are required in the plumbing system

*Identify and install an interceptor in a lab.*

- Describe the code requirements for the installation of storm drainage systems (materials, joints, connections, sizing, etc)
- Perform storm drainage pipe sizing exercises
- Describe the code requirements for the installation of fuel pipe systems (materials, joints, connections, sizing, etc)
- Perform fuel pipe sizing exercises
- Explain the general requirements for fire stop protection

*Isometric Drawings and Material Lists - 15 hours*

- Drain, Waste and Vent System Drawing
- Water Distribution System Drawing
- Drain, Waste and Vent System Material List
- Water Distribution System Material List
- Trim Material List

*Objectives:*

- Given a set of residential blueprint drawings (example: residence on plumbing street). The student will complete to minimum UPC standards the following:
- Isometrically draw the drain, waste and vent system
- Isometrically draw the water distribution system
- Create a material list for the drain, waste and vent system
- Create a material list for the water distribution system

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- *Create a material list of the plumbing fixtures and trim*

*Safety - 6 hours*

- *Recognizing safe and unsafe working conditions in the work place environment*

*Objectives:*

- *Give examples of direct and indirect costs of workplace accidents*
- *Identify safety hazards of the construction industry*

*Math Applications - 10 hours*

- *Area*
- *Volume*
- *Pressures*

*Objectives:*

- *Calculate area for various geometric shapes*
- *Calculate water volumes, weights, and gallons for various geometric shapes*
- *Calculate pressure from height of water*

*Review - 9 hours*