



Course Name	Piping Systems Part 1
Credit Hours	3.5 Hours
Course Description	This course introduces operators to piping systems and familiarizes them with the larger components that make piping systems function, including metallic and nonmetallic piping, tubing, and hoses.
Course Objectives	<p>After completing this course, the licensee should be able to:</p> <ul style="list-style-type: none">• Describe what typical piping systems consist of and explain their importance to plant operations.• Identify common valves and fittings, pipe hangers and supports• Describe the effects of temperature on piping system components and explain the need for insulation.• List routine maintenance considerations for piping systems.• Explain how metal pipes are sized and designated according to standard codes and schedules.• Identify the characteristics of metals that make them suitable for a variety of piping applications.• Discuss the major considerations involved in the maintenance of metal piping.• Describe the different methods of connecting sections of metal pipe, including bell-and-spigot joints, welded, soldered, or brazed joints, screwed or threaded joints, and flanged joints.• Name the basic nonmetallic piping materials and discuss the advantages and disadvantages of each.• Identify the different forms of concrete pipe.• Discuss the limitations of plastic pipe.• Explain the difference between thermoplastic and thermosetting plastic pipe.• Describe how to join sections of nonmetallic pipe, and how to maintain them.• Compare piping and tubing and list the major advantages of tubing.• Describe the methods of cutting, bending, and joining sections of tubing.• List the main types of metal tubing and describe the kinds of industrial applications in which they are used.

- List the main types of plastic tubing and describe the kinds of industrial applications in which they are used.
- Explain how hoses are sized, classified, and constructed.
- Define basic hose terminology.
- Discuss the respective advantages of metallic hose, nonmetallic hose, and reinforced nonmetallic hose.
- Describe the common types of hose couplings used in industrial service.
- List the primary maintenance requirements of hoses.

Course Timed Syllabus

Attached

Method of Presentation

This online course uses instructor-led video, animation, text, and images. Multiple choice questions are used to test how well the student understands the material between each section. Each answer choice has a response which tells the student whether the selected answer is correct or not.

Schedule and Location

This course may be taken at any time at www.aypotech.com. The student may sign in and out of the course as many times as needed to complete the course.

Attendance Verification

Licenses can only access the training course using a secure username and password, linked to their unique email address.

Method of Evaluation

The licensee must complete all multiple-choice questions between sections correctly to get credit for the course. If their first response is incorrect, students will have to try again until they choose the correct answer. Question choices are randomized, so each participant will have a unique testing experience.

The course is also timed; participants will not get credit until they spend at least 210 active minutes in the course.

After successful completion of the course, the licensee is required to complete and submit a questionnaire in order to access their certificate of completion.

Instructor(s)

Jerry Durham

Cost

\$35

Piping Systems Part 1 Timed Syllabus

Section	Topic	Questions	Word Count	Minutes
	Introduction to Piping Systems			
1	Piping Systems	1	526	5.4
2	Fluids	1	119	2.0
3	Protecting Steam Lines	2	681	7.7
4	Keeping Fluids Clean and Moving	2	815	8.8
5	Piping System Maintenance	1	411	4.4
6	Valves and Fittings	1	365	4.0
7	Pipe Hangers and Supports	1	172	2.4
8	Temperature Effects	1	219	2.8
9	Piping Insulation	1	389	4.2
10	Typical Piping Systems	1	266	3.2
11	Maintenance Considerations	2	355	5.0
	Metal Piping			
12	Pipes	1	217	2.8
13	Pipe Schedules and Other Pipe Codes	1	482	5.0
14	Types of Systems	1	443	4.7
15	Metal Piping	1	591	5.9
16	Pipe-Manufacturing Methods	1	287	3.4
17	Behavior of Fluids in Piping	1	330	3.8
18	Piping Applications	1	551	5.6
19	Maintenance Considerations	1	487	5.1
20	Joining Pipe	3	1203	13.0
	Nonmetallic Piping			
21	Nonmetallic Piping Materials	1	162	2.4
22	Concrete Pipe	3	961	11.0
23	Asbestos-Cement Pipe	1	309	3.6
24	Plastic Pipe	1	773	7.4
25	Limitations of Plastic Pipe	1	173	2.4
26	Joining Plastic Pipe	2	869	9.2
27	Maintaining Plastic Pipe	1	142	2.2
28	Glass Pipe	1	438	4.7
29	Maintenance Requirements	1	117	2.0
	Tubing			
30	Tubing	2	963	10.0
31	Advantages of Tubing	2	495	6.1
32	Tube Joining	1	1006	9.4
33	Types of Tubing	2	263	4.2
34	Tubing Applications	2	777	8.5
35	Plastic Tubing	1	209	2.7
36	Other Applications and Maintenance	1	379	4.2
	Hoses			
37	Hoses	1	333	3.8
38	Codes and Sizes	1	281	3.3
39	Hose Classifications	1	60	1.5
40	Hose Terminology	5	813	11.8
41	Reinforced Nonmetallic Hose	1	757	7.3
42	Nonmetallic Hose	1	311	3.6
43	Metallic Hose	1	339	3.8
44	Hose Couplings	3	788	9.6
45	Maintenance	1	257	3.1
	Totals:	63	20884	237.0
	Time Required to Complete Course:			210

Ralph Stevens

Certificates/Licenses

- Certified Maintenance Reliability Professional
- Grade 4 Electrical/Instrumentation & Grade 3 Water Treatment Operator Licenses (CA)
- Grade 3 Operator, Maintenance Technician, & Grade 1 Collection Operator Licenses (AZ)

Instructional Experience

TPC Training/JADE Learning/American Safety Council 2017 - present

Conducts training seminars, assessing the training needs and comprehension of the students, preparing training material and agenda, continually enhancing technical instructional delivery and presentation skills, adjusting course content in accordance with business needs and regulatory requirements, and ensuring the quality of the course content throughout a course life cycle. Over 600 hours of classroom instructional experience per year.

California Water Environment Association

Class trainer for Electrical/Instrumentation licensees. Workshop trainer for Reliability Centered Maintenance.

Technical Experience

Maintenance Reliability Supervisor (CCWRD) 2017 - 2020

Helping leadership enhance the district into RCM, RCD, and Operational Excellence.

Planner/Scheduler (Clark County Water) 2012 - 2014

Planned, scheduled, inspected work performed along with mentoring staff at the WWTP, lift stations and lagoons. Instructed staff on the install, repair, and maintenance of motors, pumps, SCADA, controls, plant facilities and project management. Used Maximo EMS to monitor and control work flow, budgets, assets, and cost roll up. Served as onsite safety trainer, odor compliant person, and site inspector. Performed root cause analysis and predictive maintenance on plant equipment.

Electrical Supervisor (Metropolitan Water Reclamation) 1978 - 2012

Supervised Electrical Department in all wastewater processes, SCADA control wave, lift stations, deep tunnel, power plant sub-stations, control structures, disinfection, ozone, pumps, tide gates, and day-to-day operations. Supervised 4 WWTP operators, 24 electricians, support trades and contract workers. Setup the Mainsaver CMMS system, asset management, job and safety plans, and RCM implementation. Used CMMA and SAP to track progress, order parts, schedule work, and oversee work order completion. Worked on general construction from the sub-contractor side of the Deep Tunnel Storm Water Collection Systems.