



4-DAY COURSE SYLLABUS

Piping Systems Design

TFBE02-ONL26 · ONLINE (ZOOM)

This course equips participants with the fundamentals of thermodynamics, fluid mechanics, and design principles essential for design of piping systems used to transport gases, liquids, and slurries. Success in solving problems, improving processes, and troubleshooting faults often hinges on the ability to select proper system components and perform accurate design and sizing calculations. This course introduces essential concepts in thermodynamics and fluid mechanics, providing the foundational knowledge needed to design piping systems for gases, liquids, and slurries.

CEUS / PDHS	INSTRUCTOR	DAYS	PRICE	WORKSHOPS	SKILL LEVEL	COURSE CODE
2.2 / 22	Dr. Mohamed Hamed, PhD, P.Eng., FEC	4	\$2,095.00 CAD	3 workshops	Beginner	TFBE02- ONL26

DESCRIPTION

This course equips participants with the fundamentals of thermodynamics, fluid mechanics, and design principles essential for design of piping systems used to transport gases, liquids, and slurries.

Success in solving problems, improving processes, and troubleshooting faults often hinges on the ability to select proper system components and perform accurate design and sizing calculations. This course introduces essential concepts in thermodynamics and fluid mechanics, providing the foundational knowledge needed to design piping systems for gases, liquids, and slurries.

The course material is designed for individuals with little background in the subject but also offers valuable insights for experienced professionals in piping system design.

WHAT YOU WILL LEARN

- Understand the principles of thermodynamics, heat transfer, and fluid mechanics related to gas, liquid, and slurry piping systems design and sizing
- Design and size various types of piping systems
- Use analytical and empirical tools for the design and analysis of piping systems
- Evaluate technical alternatives while considering practical limitations and criteria

COURSE OUTLINE

- 01 Selected Topics in Fluid Mechanics
- 02 Selected Topics in Thermodynamics
- 03 Steam Piping
- 04 Compressed Air Piping
- 05 Fuel Gas Piping
- 06 Pumps Basics and Water Piping
- 07 Oil Piping
- 08 Slurry and Sludge Piping

WHO SHOULD ATTEND

- Design and project engineers
- Technologists
- Plant and facility engineers
- Consultants
- Mechanical engineers and technologists
- Maintenance and operation personnel
- Other technical personnel needing to develop/upgrade/refresh their knowledge of HVAC systems
- Engineering students

REGISTER NOW →

Customize this course — We can offer a customized version of this course, in terms of duration and content, upon request.

REQUEST CUSTOMIZATION

DAILY SCHEDULE

4-Day Course Schedule

START

10:00 AM EST

END

5:00 PM EST

FORMAT

Live Online

One-hour lunch break each day, plus refreshment and networking breaks each morning and afternoon session.

DAY	TOPIC	SUBTOPICS
DAY I	Selected Topics in Fluid Mechanics	- Fluid Properties - Basic Equations of Fluid Mechanics - Flow in Pipe Systems
	Selected Topics in Thermodynamics	- Ideal gases and its properties - Steam properties
	Steam Piping	- Codes and Standards - Velocity and Pressure drop - Pipe wall thickness - Pipe Sizing
DAY II	Compressed Air Piping	- Properties of Compressed Air - Fans, Blowers, and Compressors - Flow of Compressed Air - Compressed air piping - Types of compressors - Sizing compressed-air-system components - Compressed-air receiver size and pump-up time
	Workshop I	Size a compressor for a compressed-air system under the instructor's guidance
	Fuel Gas Piping	- Codes and standards - Type of Fuel Gas - Gas Properties - Fuel Gas Piping Sizing - LPG Transportation - LPG Storage - LPG Tank and Pipe Sizing
DAY III	Pumps Basics and Water Piping	- Types of pumps - Pump testing methods - Cavitation and net positive suction head - Dimensional analysis of pumps - Specific speed and pump types - Design and sizing of water piping systems
	Workshop II	Design and size a water piping system under the instructor's guidance
DAY IV	Oil Piping	- Properties - Pressure Drop and Minor Losses - Complex Piping Systems - Pumping Power and Pump Types - Pipeline Economics
	Slurry and Sludge Piping	- Slurry transport principles - Special design challenges - Types of Slurry Pumps - Specific speed and wear - Areas of wear, casing and impeller - Sump design - Effect of slurry on pump performance
	Workshop III	Size a slurry pump for a coal slurry piping system under the instructor's guidance