



## Thermodynamics and Application of Energy Balances

### MODULE

#### About the Skill Module

This skill module provides an overview of the concepts of thermodynamics, which is the foundation for all processing calculations. This skill module explains the first and second law of thermodynamics and their application in facilities. Also covered are applications of energy balance equations, the concepts of enthalpy and entropy, and an explanation of how to use P-H diagrams to perform calculations on a simple refrigeration system.

[See example online learning module](#)

#### Target Audience

Production and processing personnel involved with natural gas and associated liquids, to acquaint or reacquaint themselves with gas conditioning and processing unit operations. This course is for facilities engineers, process engineers, senior operations personnel, field supervisors, and engineers who select, design, install, evaluate, or operate gas processing plants and related facilities. A broad approach is taken with the topics.

#### You Will Learn

Participants will learn how to:

- Define the terms system and surroundings and explain the difference between open and closed systems
- State the first law of thermodynamics and how it is applied to facilities
- Describe the second law of thermodynamics, and explain how it is applied to facilities
- Write the energy balance equations for a heat exchanger, valve, separator, and compressor
- Calculate the duty of a heat exchanger where no phase change occurs and also for an exchanger where a phase change does occur
- List methods used to estimate enthalpy and entropy
- Describe a P-H diagram and use it to perform calculations on a simple refrigeration system

#### Product Details

Categories: [Midstream](#)

Disciplines: [Gas Processing](#)

Levels: Basic

Product Type: Individual Skill Module

Format: On-Demand

Duration: 2 hours (approx.)

**\$250.00**