



5-DAY COURSE SYLLABUS

Refrigeration and Chiller Plants

RFBE01-ONL26 · ONLINE (ZOOM)

This course offers essential knowledge for mastering the fundamentals, sizing, operation, and troubleshooting of refrigeration systems and chiller plants. Designers and operators of refrigeration systems and chiller plants must master key concepts, including the vapor compression cycle, component selection, capacity control, and system diagnostics. This course covers these fundamentals, along with refrigerant types, piping layout, safety considerations, and troubleshooting techniques. Additionally, the course addresses operation and maintenance strategies for commercial and industrial chiller plants, with a focus on energy conservation and peak operating efficiency. Suitable for both beginners and experienced professionals, this course provides valuable insights across all experience levels.

CEUS / PDHS	INSTRUCTOR	DAYS	PRICE	WORKSHOPS	SKILL LEVEL	COURSE CODE
2.8 / 28	Dr. Mohamed Hamed, PhD, P.Eng., FEC	5	\$2,495.00 CAD	3 workshops	Beginner	RFBE01- ONL26

DESCRIPTION

This course offers essential knowledge for mastering the fundamentals, sizing, operation, and troubleshooting of refrigeration systems and chiller plants.

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WHAT YOU WILL LEARN

- Apply fundamental concepts in the design, sizing, and operation of refrigeration systems and chiller plants
- Perform refrigeration cycle sizing and equipment selection
- Design and size refrigeration piping layouts
- Implement procedures for efficient operation of refrigeration systems
- Apply diagnostic and troubleshooting techniques to resolve operational issues in refrigeration systems and water chillers

COURSE OUTLINE

- 01 Fundamentals of Refrigeration
- 02 Refrigeration System Main Components – Types, Selection, and Capacity Control
- 03 Refrigeration System – Accessories and System Level Control
- 04 Refrigeration System Piping – Sizing and Installation
- 05 Refrigerants, Oils, and Safety
- 06 Refrigeration System and Component Measurements
- 07 Refrigeration System Diagnostics, Servicing, and Troubleshooting
- 08 Commercial and Industrial Chillers
- 09 Chiller Operation and Maintenance
- 10 Energy Conservation & Peak Operating Efficiency

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

5-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	Fundamentals of Refrigeration	- Heat transfer principles - The Pressure–Enthalpy Chart - The ideal and actual Vapor compression cycle - Sizing calculations
	Workshop I	Sizing a typical refrigeration system for an air conditioning system
	Refrigeration System Main Components	- Compressors - Condensers
DAY II	Refrigeration System Main Components – Continued	- Evaporators - Expansion devices
	Refrigeration System Accessories and System Level Control	- Common accessories - System-level control strategies - Constant-volume DX systems - VAV DX systems - Chilled-water systems
DAY III	Refrigeration System Piping	- Piping materials - Layout and sizing procedures - Installation practices
	Workshop II	Sizing the refrigeration piping for a Typical Refrigeration System
	Refrigerants, Oils, and Safety	- Numbering and Types of refrigerants - Classification of refrigerants - Required properties of refrigerants - Refrigerant tables and charts - Safety handling precautions - Lubricants
DAY IV	Refrigeration System and Component Measurements	- Refrigeration system instrumentation and measurements - The air conditioning refrigeration cycle - Types of air conditioning cooling systems (Water to Water, Air to Air, Air to Water, and Water to Air) - Pressure, temperature, humidity, and airflow measurements
	Diagnostics, Servicing, and Troubleshooting	- Common system issues - Diagnostic techniques - Servicing procedures
	Workshop III	Case study – Measurements, Diagnostics and Calculation of Refrigeration System Overall Efficiency
DAY V	Commercial and Industrial Chillers	- Chiller types - Selection criteria
	Chiller Operation and Maintenance	- Maintenance strategies - Reliability and performance considerations
	Energy Conservation & Peak Efficiency	- Energy conservation system design options - Free cooling - Airside and Waterside economizers