

HVAC DESIGN, OPERATION & MAINTENANCE

“Enhance Comfort, Efficiency, and Reliability through Optimized HVAC Systems”

Schedule

Venue (In-house)	Fees
At Your Organization Premises	Ask For The Quotation

► **Available delivery methods:** In-House Training

Introduction

Heating, Ventilation, and Air Conditioning (HVAC) systems play a vital role in ensuring indoor comfort, air quality, and energy efficiency in buildings and industrial facilities. Effective HVAC design and maintenance directly impact operational costs, system reliability, and environmental performance.

This comprehensive course provides participants with an in-depth understanding of HVAC system design principles, components, operation, and preventive maintenance practices. It emphasizes practical applications, system optimization, and troubleshooting techniques to ensure maximum performance and energy efficiency.

Participants will gain the technical and managerial skills required to design, operate, and maintain modern HVAC systems that meet safety, comfort, and sustainability standards.

Objectives

By the end of this course, participants will be able to:

- Understand the fundamental principles of HVAC systems and thermodynamics
- Identify and select major HVAC components such as chillers, compressors, ducts, and air handling units
- Design efficient HVAC systems based on building and process requirements
- Apply proper load calculations, sizing, and equipment selection techniques
- Operate and maintain HVAC systems for optimal performance and energy conservation
- Diagnose and troubleshoot common HVAC problems
- Implement preventive and predictive maintenance strategies
- Ensure compliance with international standards and environmental regulations

Why Attend

Energy-efficient and reliable HVAC systems are critical for building performance and occupant comfort. This course equips you with the knowledge and tools needed to improve system design, enhance operational efficiency, and minimize energy costs.

Participants will learn proven techniques to design and manage HVAC systems effectively, resulting in long-term savings and reduced downtime.

Target Audience

This course is ideal for:

- Mechanical Engineers and HVAC Technicians
- Maintenance and Facility Engineers
- Energy and Plant Managers
- Project Engineers and Consultants
- Building Service Professionals
- Anyone involved in HVAC design, operation, or maintenance

Individual Benefits

- Gain comprehensive knowledge of HVAC systems and design principles
- Develop practical skills for system operation and troubleshooting
- Improve understanding of energy-efficient system management
- Enhance professional competency and career growth in the HVAC industry
- Learn best practices in preventive and predictive maintenance

Organizational Benefits

- Improve system reliability and energy performance of facilities
- Reduce operational costs through efficient design and maintenance practices
- Extend equipment life and minimize downtime
- Ensure compliance with environmental and safety regulations
- Build in-house expertise for sustainable HVAC operations

Instructional Methodology

This course uses a blend of:

- Interactive lectures and multimedia presentations
- Real-world case studies and design examples
- Practical exercises and problem-solving sessions
- Group discussions on system optimization and troubleshooting
- Instructor-led demonstrations of HVAC design and operation tools

Course Outline

- Module 1: Fundamentals of HVAC Systems and Thermodynamics
- Module 2: HVAC Design Principles and Load Calculations
- Module 3: Equipment Selection and Sizing (Chillers, Compressors, AHUs, FCUs)
- Module 4: Ductwork, Piping, and Air Distribution Systems
- Module 5: Operation and Control of HVAC Systems
- Module 6: Energy Efficiency and System Optimization
- Module 7: Preventive and Predictive Maintenance Techniques
- Module 8: Common Faults and Troubleshooting Procedures
- Module 9: Environmental Considerations and Indoor Air Quality
- Module 10: Best Practices and Case Studies

Certification

Upon successful completion, participants will receive a Certificate in HVAC Design, Operation & Maintenance, demonstrating their ability to design, manage, and maintain HVAC systems with improved performance, safety, and energy efficiency.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation's unique goals.

In-House / Customized Training

Interested in running this course for your team?

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