



**ADVANCED DIPLOMA OF
MECHANICAL ENGINEERING TECHNOLOGY**

MODULE DETAILS

Module 9: Heating, Ventilation and Air Conditioning

Nominal duration: 4 weeks (48 hours total time commitment)

This time commitment includes the preparation reading, attendance at each webinar (1 hour plus 15-30 minutes for discussion), and the time necessary to complete the assignments and further study.

MODULE PURPOSE

This module is designed for engineers and technicians from a wide range of abilities and backgrounds and will provide an excellent introduction to the fundamentals of Heating, Ventilation and Air Conditioning. It commences with a review of psychrometric charts and then examines the factors that influence design choices, indoor air quality, load calculations and heating/ventilation and air conditioning systems. Numerous tips and tricks throughout the module make it very practical and topical to individual applications.

**PRE-REQUISITE
MODULE/UNIT(S)**

NONE

ASSESSMENT STRATEGY

To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.

**SUMMARY OF LEARNING
OUTCOMES**

1. Examine and discuss basic concepts in HVAC
2. Interpret and utilize psychrometric charts
3. Examine and discuss heating/cooling system design conditions and calculations
4. Examine and discuss Indoor Air Quality
5. Describe the design and operation of HVAC systems

Learning Outcome 1

Examine and discuss basic concepts in HVAC

Assessment criteria

- 1.1 Examine and discuss the properties of solids, gas and water

Learning Outcome 2

Interpret and utilize psychrometric charts

Assessment criteria

- 2.1 Describe the process for utilizing psychrometric charts
- 2.2 Explain the physical and thermodynamic properties of air
- 2.3 Describe the measurement of wet and dry bulb temperatures



ADVANCED DIPLOMA OF MECHANICAL ENGINEERING TECHNOLOGY

- 2.4 Perform calculations related to (a) heating, (b) cooling, (c) humidification and (d) dehumidification

Learning Outcome 3

Examine and discuss design conditions and calculations

Assessment criteria

- 3.1 Examine the impact of outdoor climate and indoor comfort considerations on system design
- 3.2 Perform cooling load calculations

Learning Outcome 4

Examine and discuss Indoor Air Quality (IAQ)

Assessment criteria

- 4.1 Summarize the effects of indoor air quality on occupants
- 4.2 Describe the basic investigation techniques to determine indoor air quality
- 4.3 Examine the effect of architectural, engineering and interior design choices on good IAQ

Learning Outcome 5

Describe the design and operation of HVAC systems

Assessment criteria

- 5.1 Discuss the basics of HVAC systems in terms of design and operation
- 5.2 Examine and discuss the relative merits of air, water and hybrid systems

Delivery Mode

A combination of asynchronous and synchronous e-learning delivery comprising a judicious mix of interactive online web conferencing, simulation (virtual labs) software, remote online labs, online videos, PowerPoint slides, notes, reading and study materials (in PDF, HTML and Word format) accessed through the Moodle Learning Management System (LMS).