

## 1. Module details

**Module name**

**BUILDING MANAGEMENT SYSTEMS**

**Nominal duration**

One module  
It is anticipated that students will achieve the competencies specified in 35 to 40 hours.

**Module codes**

**EA136**

**Discipline code**

## 2. Module purpose

To enable the student to operate a typical BMS for the purpose of monitoring, fault finding and management of building services.

## 3. Prerequisites

EA050 - Engineering Computing  
EA146 - Introduction to Air Conditioning  
EA135 - Applied Psychrometrics

## 4. Relationship to competency standards

TBA

## 5. Content

1. Functions of a BMS:
  - autonomous Functions
    - input
    - output
    - general I/O
    - installation management items
    - energy management
    - risk management
  - information processing
  - objectives
    - building running costs
  - smoke control as per AS 1668 part 1
2. BMS hardware:
  - system architecture
  - communication devices
  - substations
  - PC's
  - interfaces with other systems
3. Input and output functions:
  - digital - inputs/outputs
  - digital output with status feedback
  - analogue input/output
  - sensors
  - alarms

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## 6. Learning outcome details

### Learning outcome 1

#### Assessment criteria

### Learning outcome 2

#### Assessment criteria

4. Energy management:
  - night cycle
  - optimum stop/start
  - time and event programs
  - night purge
  - outside air percentage control
  - enthalpy control
  - power demand control
  - duty cycle
  - presence detection
  - lighting control
5. Information processing functions:
  - computer systems
  - central system management
  - programs
  - system configuration and security
  - operator - machine interface
  - data points
6. Risk and maintenance management
  - system files
  - fire, intruder control
  - access control

On the completion of this module, the learner will be able to:

Describe the principle operating functions and objectives of building management systems.

Short answer test.

1.1 List the operating functions of a BMS.

1.2 Describe the objective of each operating functions.

Identify and describe the operation of all principal hardware components of a BMS.

Short answer test/practical exercise.

2.1 Identify all principle hardware components form diagrams or an actual systems.

2.2 Describe the function of each component.

<b>Learning outcome 3</b>	Identify and monitor input and output functions of a typical BMS.
<b>Assessment criteria</b>	<p>Practical exercise.</p> <p>3.1 Differentiate between digital inputs and digital outputs.</p> <p>3.2 Differentiate between analogue inputs and analogue outputs.</p> <p>3.3 Monitor inputs and outputs from a BMS to monitor equipment status.</p>
<b>Learning outcome 4</b>	List and describe the energy management functions of a BMS.
<b>Assessment criteria</b>	<p>Short answer test/practical exercise.</p> <p>4.1 List and describe typical energy management functions.</p> <p>4.2 Monitor data from a BMS.</p>
<b>Learning outcome 5</b>	Use information-processing functions of a BMS.
<b>Assessment criteria</b>	<p>Short answer test/practical exercise.</p> <p>5.1 Identify and describe different methods of system configuration.</p> <p>5.2 A BMS software program and access all REG functions.</p>
<b>Learning outcome 6</b>	Describe the use of risk and maintenance management functions as incorporated into a BMS.
<b>Assessment criteria</b>	<p>Short answer test.</p> <p>6.1 Describe the necessary objectives of a maintenance management system.</p> <p>6.2 Identify the system files of a BMS.</p> <p>6.3 Explain clearly how risk management function are used and incorporated into a BMS.</p>
<b>7. Assessment Strategies</b>	See Assessment Criteria.
<b>8. Module Delivery Strategies</b>	

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## 9. Resource Requirements

Control Systems for Heating Ventilating and Air Conditioning, 4th Edition, R.W. Haines Van Nostrand Reinhold.

DDC Control. Trane Publications.

Engineering Manual of Automatic Control, SI Edition, Honeywell 1989.

Inside Building Management Systems, H.P Scheepers, Uitgeverij de Spil B V - Woerden 1991.