

1. Module details

Module name	Commissioning HVAC Systems
Module duration	One Module (36-40hrs)
Module code	EA130.1
Discipline code	TBA

2. Module purpose

To enable students to commission HVAC system and all associated plant and equipment (excluding Air Handling Systems) that is responsibility of a mechanical services technician

3. Prerequisites

HVAC Air Systems EA131
 HVAC Hydronic Systems EA133
 HVAC Control Systems EA132

4. Relationship to competency standards

NES 404e, NES503e, NES303e

5. Content

- 1. Fundamentals**
 - building specifications/requirements/responsibilities
 - building codes
 - local Government regulations
 - human comfort - comfort chart
 - reporting procedures
 - review fluid mechanic principles
 - pre-commissioning checks
- 2. Air Systems (excluding air balancing)**
 - Air testing
 - air tab instruments
 - air flow
 - pressure
 - temperature
 - fan testing
 - leakage testing
 - system capacity calculations
- 3. Hydronic Systems**
 - hydronic tabulation instruments
 - fluid flow
 - pressure
 - temperature
 - pumps. pump curves and system curves

- pump testing
- hydronic
 - balancing procedures
 - general
 - compensation method
- balancing valves
- capacity calculations

4. Refrigeration Systems

- AS1677
- HB40
- pressure testing
- evacuation
- charging
- control setting
- commissioning reports
- system performance and capacity

5. Plant and equipment

- controls
- heat exchangers
- chillers
- boilers
- cooling towers

6. Assessment strategy

Assessment methods

Short Answer Questions/Assignment
Practical sessions

Conditions of assessment

7. Learning outcome details

Learning outcome 1

Read and interpret building mechanical service installation specifications, building codes and local government regulations, compile and report performance levels to industry standards.

Assessment criteria

- 1.1 Interpret system specifications from design documentation.
- 1.2 Apply relevant building codes and local government regulations to a commissioning project.
- 1.3 Explain the application of fluid mechanic principles as applied to HVAC installations

Learning outcome 2	Correctly test, adjust total system air quantities using appropriate instruments an HVAC air system given the specifications.
Assessment criteria	<ul style="list-style-type: none">2.1 Accurately use air measuring test instruments2.2 Correctly test and adjust a multi-zone constant volume and variable volume HVAC Air System.2.3 Calculate system capacity - air side
Learning outcome 3	Correctly test, adjust, purge air and balance using appropriate instruments, and HVAC hydronic system, given the specifications.
Assessment criteria	<ul style="list-style-type: none">3.1 Accurately use fluid flow measuring test instruments3.2 Correctly test, adjust and balance a chilled/heating water system used in a HVAC installation.3.3 Calculate system capacity - water side.
Learning outcome 4	To effectively commission the refrigeration (cooling) system per relevant codes and regulations
Assessment criteria	<ul style="list-style-type: none">4.1 Complete preliminary system checks4.2 Pressure test the refrigerant system and pipe work4.3 Evacuate the refrigeration system and pipe work4.4 Charge the refrigeration system with refrigerant4.5 Test and adjust refrigeration system equipment and controls for effective operation4.6 Complete a commissioning report4.7 Calculate the system capacity – refrigeration side
Learning outcome 5	Correctly test, adjust and balance all associated HVAC plant and equipment.
Assessment criteria	<ul style="list-style-type: none">5.1 Commission to given specifications :<ul style="list-style-type: none">- Control system- Chiller (reciprocating and centrifugal)- Boiler (gas and oil fired)- Cooling tower- Heat exchanger

8. Delivery of the module

Delivery strategy

Class room , Practical workshops, on site , by assignment

Resource requirements

Occupational health and safety requirements

Students should be made aware of occupational health and safety issues in all situations and be expected to demonstrate safe working practices at all times.