

1. Module details

Module name

Maintenance & Service of Comfort & Process Cooling Systems

Module duration

1.0 module (36-40hrs).

Module code

NR034

Discipline code

0703310 – Air Conditioning Systems

2. Module purpose

This module aims to provide instruction for persons employed in the installation of air handling plant.

3. Prerequisites

NBB02 Occupational Health and Safety

4. Relationship to competency standards

This module provides 1:1 alignment with the National and Metal Engineering CSU - *13.7 Maintain Water Cooling Towers and Treatment Systems* in developing generic skills.

5. Content

1.
 - .Disease
 - .natural and artificial habitat
 - .legionella
 - .other harmful bacteria, acids
2.
 - .Checking for scale sludge, fungus, etc
 - .physical deterioration, rot, breakage
 - .tower bleed-off
3.
 - .Microbial testing
 - .water analysis
 - .various treatment systems
 - .upgrade of systems
 - .sampling
 - .test equipment
4.
 - .Protective clothing
 - .emergency management plan
 - .information and advice (AS1470)
 - .legislation and responsibilities
5.
 - .water disposal
 - .sewer or waste disposal
 - .using broad spectrum biocides
 - .operation module
6.
 - .replacement of deteriorated components
 - .dosing with sodium hypochlorite
 - .cleaning
 - .high risk locations
7.
 - .pre-maintenance survey
 - .service and maintain log books
 - .ball float operation
 - .water distribution
 - .vibration
 - .water leakage

<p>6. Assessment methods</p> <p>Conditions of assessment</p>	<p>Individual learners must submit/provide: .written or verbal short answers for given questions.</p> <p>Assessment will take place in a distraction free environment.</p> <p>The written or verbal short answer test will be with the aid of reference materials such as text books or written notes.</p> <p>Learners will require access to the essential facilities and equipment listed under Resource requirements in Section 8: Delivery of the module</p>
<p>7. Learning outcome details</p> <p>Learning outcome 1</p> <p>Assessment criteria</p> <p>Learning outcome 2</p> <p>Assessment criteria</p> <p>Learning outcome 3</p> <p>Assessment criteria</p> <p>Learning outcome 4</p> <p>Assessment criteria</p> <p>Learning outcome 5</p> <p>Assessment criteria</p>	<p>Identify systems under AS3666.</p> <p>1.1 Identify types of cooling systems as defined in AS3666.</p> <p>List procedures to control legionellae.</p> <p>2.1 Observe safety precautions</p> <p>2.2 Safe handling</p> <p>2.3 Identify assembly methods according to manufacturer’s instructions</p> <p>Operate and test treatment water systems.</p> <p>3.1 List code requirements</p> <p>3.2 List regulation requirements</p> <p>Clean a cooling tower to the prescribed standard</p> <p>4.1 Observe safety precautions</p> <p>4.2 Inspect cooling tower and make adjustments to meet manufacturer’s and code requirements.</p> <p>Decontaminate a cooling system in accordance with the prescribed standard</p> <p>5.1 Identify sources of contamination</p> <p>5.2 List the steps to be undertaken in decontaminating cooling systems in accordance with manufacturer’s and code requirements.</p>
<p>8. Delivery of the module</p>	

Delivery strategy

The delivery of this module must be suitable for theoretical learning of practical applications and the module purpose.

It is recommended that the learning outcome sequence be followed during the learning process.

An integrated theory/practical application approach should be used for all the learning outcomes to enable the learners to develop their knowledge of maintenance and service of cooling towers.

A demonstration of water treatment methods cleaning and decontaminating will facilitate the learning of this material.

Learners must be given the opportunities to develop the knowledge required for all the learning outcomes before they are assessed

Resource requirements

Minimum equipment:

- .Classroom aids
- .Operation Cooling towers
- .Protective clothing
- .Sterile sample bottles
- .High pressure water cleaning unit
- .Dip slides

Recommended texts:

Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH). Application Manual No. DA 17, Evaporative Cooling tower Systems. 1995.

Standards Australia, AS 3666-1989. Air-Handling and Water Systems of Buildings-microbial Control

Standards Australia Handbook, HB32-1992. Control of Microbial Growth in Air-Handling and Water Systems in Buildings.

Standards Australia, AS 1668-1991. The Use of Mechanical Ventilation and air-handling in Buildings. Part 2: Mechanical Ventilation for acceptable indoor air quality.

NSW Health Department. Code of Practice for the Control of Legionnaires' Disease. Sydney, 1992. (or equivalent State Code).

Occupational health and safety requirements

A safe and healthy environment will be provided for learners in regards to classroom and workshop environments.

Learners must provide and wear their own safety equipment during workshop demonstrations and practical exercises. This equipment should be in good condition, conform to relevant standards and include:

- .Safety glasses or goggles
- .Safety capped work shoes or boots
- .Disposable coveralls
- .Ear muffs or plugs
- .Face mask
- .Respirator
- .Gloves