
1. Module details

Module name

RESIDENTIAL AIR CONDITIONING

Nominal duration

One module

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

Module codes

NR007

Discipline code

2. Module purpose

To provide the student with the knowledge and skills to install, service and fault find residential air conditioning systems.

3. Prerequisites

NR005 - Air Conditioning Fundamentals

NR008 - Appliance Motors

NR029 - Capillary Systems

4. Relationship to competency standards

TBA

5. Content

1. Relevant codes

- building codes
- electrical
- health environmental

2. System operation

- construction, operation and application of:
 - room air conditioners
 - split systems
 - evaporative
 - ducted
 - cassette
 - reverse cycle
 - refrigeration system
 - control system
 - air distribution
 - fans
 - ducts
 - filters
 - registers
 - noise
 - vibration
 - water make up

3. Heat load calculations

- design conditions
- residence survey
- typical heat load sources

6. Learning outcome details

Learning outcome 1

Assessment criteria

Learning outcome 2

Assessment criteria

Learning outcome 3

Assessment criteria

- load calculations
- equipment sizing
- air distribution selection

4. Installation and commissioning

unit location

- services
- piping layout
- ducting
- controls - operating and safety
- balance
- customer familiarisation

5. Service and fault finding

- typical faults from symptoms
- test equipment
- code of practice
- manufacturers maintenance manuals
- testing procedure
- fault isolation and repair
- electrical safety
- respect for customers premises

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

Apply the relevant codes to installation and service of residential air conditioning systems.

1.1 Identify and apply the relevant codes to the installation and service of residential air conditioning systems.

Describe the construction, operation and application of residential air conditioners.

2.1 identify the major components, describe their construction and operation within the system.

2.2 Describe the overall system operation of a typical residential air conditioning system.

2.3 For a given set of conditions, select the most appropriate system to satisfy the requirements.

Use appropriate methods to size a selected system for a specific residential application.

3.1 Select the design conditions for a given installation.

3.2 Identify typical heat load sources relevant to a residential installation.

3.3 Use a short method to determine the heat load of a residential

	installation.
	3.4 Use manufacturers data to select equipment to match calculated conditions.
Learning outcome 4	Describe installation and commissioning procedures for residential air conditioning systems.
Assessment criteria	<p>4.1 Develop installation specifications to suit a typical residential air conditioning installation.</p> <p>4.2 Specify the commissioning procedures to be adopted when commissioning a residential air conditioning system.</p> <p>4.3 Demonstrate correct lifting and moving techniques consistent with the installation and service of residential air conditioning equipment.</p>
Learning outcome 5	Use appropriate resources to service and fault find residential air conditioning systems.
Assessment criteria	<p>5.1 Using manufacturers manuals, select and use appropriate test equipment to fault find typical residential air conditioners.</p> <p>5.2 Apply appropriate codes of practice, select and use tools and equipment to the service and fault finding of residential air conditioning systems.</p> <p>5.3 Isolate electrically, and make safe, components and the overall system.</p>
7. Assessment Strategies	<p>Written tests.</p> <p>Practical assignments.</p> <p>Projects.</p> <p>Practical exercises.</p>
8. Module Delivery Strategies	<p>Delivery strategies must be suitable for both theoretical and /or practical learning and module purpose.</p> <p>It recommended that learning and assessment be facilitated in a holistic manner which may require a learning outcome sequence other than that indicated in the body of this module.</p> <p>Also, an integrated theory/practice approach should be used where students learn by practical exercises and through research and workshop reports.</p>
9. Resource Requirements	Appropriate practical equipment, service manuals, schematic diagrams test equipment.

10. Occupational health and safety requirements

Useful references include:

Australian Refrigeration and Air Conditioning, Volumes I & II, A CR & D Project Trust Publication.

Dossat R.J., Principles of Refrigeration, Second Edition, SI Version, John Wiley and Sons, New York. Latest Edition.

ASHRAE Handbook, Refrigeration Systems and Applications., SI Version, ASHRAE, Atlanta.

A safe and healthy environment will be provided for students in regards to classroom and workshop safety.