

1. Module details

Module name

Telecommunications Cabling Installations

Suggested structured learning time

A learner possessing the prerequisite skills and knowledge should achieve the module purpose in 36 – 40 hours.

Module code

NTC111

Discipline code

031307

2. Module purpose

The purpose of this conversion module is to provide qualified electricians with the knowledge and skills associated with the installation practices of telecommunications cabling.

3. Learning pathway

Intended use in the structured learning program

This module is intended to supplement workplace experience in telecommunication installation. In particular it focuses on the installation of cabling and equipment, testing and the application of standards.

Therefore before undertaking this module a Learner should have an understanding of the safe use of hand and power tools, how services are integrated into building structures and the need to work safely.

Recommended prerequisites

For the most effective learning this module should be undertaken only after modules covering Occupational Health and Safety, building methods and the safe use of hand and power tools are completed.

4. Relationship to competency standards

This module provides part of the underpinning knowledge and skills in the ‘Evidence Guide’ of specific units of competency in the National Electrotechnology Training Package and provides similar support, where mapped, to equivalent units in the National Metals and Engineering Competency Standards. For details refer to the module to unit maps, available from NUEITAB.

5. Content

1. Telecommunications terminology
 - regularly used terms, component names and abbreviations
2. Telecommunication components
 - cables: structure, types, colour codes, preparation
 - termination systems: types, frames and outlets

3. Telecommunication installations
 - plans: reading and interpretation, provision identification
 - installation techniques:
 - cabling: backbone and facility
 - building distributions (iBD) (was MDF)
 - floor distributions (FD) (was IDF)
 - floor distribution points (FDP)
 - telecommunication outlets (TO)
4. Functional and protective earthing systems
 - telecommunications reference conductor (TRC)
 - telecommunications functional earthing electrode (TFEE & TTFEE)
 - overvoltage protection
5. Records
 - cards/books
 - plans
6. Testing and commissioning
 - types of tests
 - test equipment and applications
 - hand-over, cable advice form
7. Basic design of commercial installations
 - new plans
 - modification to existing plans
 - provisioning

6. Assessment strategy

Assessment methods

Assessment should be progressive reflecting a holistic approach to ensure the module purpose is met. To assist in ensuring validity, reliability and fairness assessment instruments should include practical exercises, assignments and written tests consisting of a number of item types, such as multiple choice, short answer and problem solving.

Conditions of assessment

Learning and assessment will take place in an environment that is conducive to a learner's development.

7. Learning outcome details

Learning outcome 1

Read and interpret common terms and abbreviations associated with telecommunication cabling installations.

Assessment criteria

- 1.1 Use correct terminology in verbal explanations or written responses.
- 1.2 Interpret abbreviations from diagrams and written material.

Learning outcome 2

Identify and describe common types of communication cables.

Assessment criteria

- 2.1 Identify communication cables commonly used for internal and external installations.
- 2.2 Explain the construction of various cables.
- 2.3 Explain the information carrying capacity of various cables.
- 2.4 Explain the relationship of the basic technical characteristics of cable to the operating system.
- 2.5 Select the correct cable types for given operating systems.

Learning outcome 3

Demonstrate preparation processes for cable terminations.

Assessment criteria

- 3.1 Safely demonstrate different methods of stripping cable sheaths.
- 3.2 Demonstrate cable pair separation according to colour code or other identification codes.
- 3.3 Demonstrate cable pair fanning techniques according to cable module types.

Learning outcome 4

Outline the effects on informational data transmitted on damaged cables.

Assessment criteria

- 4.1 Describe the various causes of cable damage.
- 4.2 Explain how damaged cables affect the signals used by the operating system.

Learning outcome 5

Identify cable termination units and systems.

Assessment criteria

- 5.1 Explain the purpose of different cable termination units.

	Identify cable termination types, frames and outlets.
Learning outcome 6	Read, and interpret plans and records associated with telecommunications cabling installations.
Assessment criteria	<p>6.1 Identify telecommunication cabling plans, records, symbols and abbreviations.</p> <p>6.2 Read and interpret simple commercial premises plans and records.</p> <p>6.3 Sketch simple backbone cabling plans no either a building floor plan or a site plan for external cabling.</p>
Learning outcome 7	Describe telecommunications cabling installation techniques and associated Austel regulations for domestic and commercial premises.
Assessment criteria	<p>7.1 Describe methods of installing cables for domestic premises in accordance with Austel regulations.</p> <p>7.2 Describe methods of installing cables for commercial premises in accordance with Austel regulations.</p>
Learning outcome 8	Assemble and mount a range of distribution boxes/cabinets and backmounts in accordance with Austel regulations.
Assessment criteria	<p>8.1 List and Austel specifications/regulations in relation to the mounting of distribution boxes (BD,FD,FDP,TO).</p> <p>8.2 Mount a variety of cable distribution boxes and backmounts in accordance with Austel regulations.</p>
Learning outcome 9	Terminate cables in distribution boxes/cabinets.
Assessment criteria	<p>9.1 Identify five cable distribution systems.</p> <p>9.2 List and describe the component parts of a distribution system.</p> <p>9.3 Prepare in and out going cable, group and terminate cables using appropriate tools.</p> <p>9.4 Run jumpers on a variety of distributions systems.</p> <p>9.5 Complete jumpering records for a variety of distribution systems.</p>
Learning outcome 10	Describe and install functional and protective earthing systems.

Assessment criteria	<p>10.1 Describe and install a Telecommunication Reference Conductor (TRC) earthing system to Austel requirements.</p> <p>10.2 Describe and install a Telecommunication Functional Earth Electrode (TFEE) earthing system to Austel requirements.</p> <p>10.3 Describe and install a Telecommunication Telex Functional Earth Electrode (TTFEE) earthing system to Austel requirements.</p> <p>10.4 Install and explain the necessity for correctly earthing shielded cable.</p> <p>10.5 Outline the effect of RFI/EMI and other electrical interference as it relates to telecommunications cabling.</p> <p>10.6 Install and explain the necessity for overvoltage protection devices commonly used in telecommunication installations.</p>
Learning outcome 11	<p>Explain and implement cable installation testing and commissioning procedures.</p>
Assessment criteria	<p>11.1 Describe the common tests for cable installations.</p> <p>11.2 11.2 Correctly carry out and interpret results of common tests for cable installations.</p> <p>11.3 11.3 Describe the commissioning procedures and "hand-over" requirements for a new and modified cable installation.</p> <p>11.4 Complete Austel "Cable advice form".</p>
Learning outcome 12	<p>Develop the basic telecommunications design requirements for a new and a modified commercial premise from client specifications.</p>
Assessment criteria	<p>12.1 Develop the telecommunication design requirements and sketch plans for a new commercial premise.</p> <p>12.2 Develop the telecommunication design requirements and change existing plans for a modified commercial premise.</p> <p>12.3 Read existing plans to determine the 'provisioning' requirements for the cable installation.</p>

8. Delivery of the module

Delivery strategy

Delivery strategies must be suitable for learning both theoretical and practical aspects described in the module purpose. It is considered that the most effective method to achieve this is by integration of theory and practice where students learn by experimentation, research and reports. It is recommended that learning and assessment be facilitated in a holistic manner that may require learning outcome sequence other than that indicated in the module.

Resource requirements

Resources should be sufficient for students to carry out learning activities on an individual basis. This will require a range of support equipment and reference material.

Where this module is used in an approved Traineeship or Apprenticeship program learners should be advised to obtain, where available, respective EEQSBA¹ *User Guides* (these outline in detail what training and work performance the Learner is required to undertake for the program).

Occupational health and safety requirements

A safe and healthy environment will be provided for learners and teachers. Safety procedures for the particular learning facilities shall be followed as part of the learning / teaching activity and assessment.

¹EEQSBA – ElectroComms and EnergyUtilities Qualifications Standards Body of Australia Ltd.