

**1. Module details****Module name****Communication Engineering Project****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 54 - 60 hours.

**Module code**

NUE953

**Discipline code**

0703215 Communication Engineering/Technologies.

**2. Module purpose**

This module will provide students with the knowledge and skills to research problems associated with the implementation of communications systems.

**3. Prerequisites**

NE39 Communications Fundamentals.

**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****Organisation and management of research processes****Researching and analysing information related to a communications system****Generation and selection of solutions to problems associated with the implementation of a communications system****Comparison and evaluation of possible technical solutions.****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**

**Organise and manage research processes.**

**Assessment criteria**

- 1.1 Demonstrate the ability to flowchart a process.
- 1.2 Identify the critical phases of research projects.
- 1.3 Distinguish between milestone events and parallel path events.

**Learning outcome 2**

**Research and analyse information related to a communications problem.**

**Assessment criteria**

- 2.1 Demonstrate the ability to research and identify the specifications of a proposed communication system.
- 2.2 Discriminate between specifications necessary to the system and information about the proposed system.
- 2.3 Discriminate between the proposed system's critical and non-critical specifications.
- 2.4 Arrange critical specifications in a hierarchy from the most critical to the least critical.
- 2.5 Categorise non-critical specifications in relation to critical specifications.

**Learning outcome 3**

**Generate solutions to a communications problem and select solutions appropriate to a particular application or applications.**

**Assessment criteria**

- 3.1 Define the problem in terms of:
  - The nature of data to be communicated
  - The data rate of the data to be communicated
  - The required reliability of the communication system
  - The required human-machine interfaces
  - Hardware and software requirements
  - Budget limits and time constraints.
- 3.2 Conduct a literature search to determine the existence of suitable solutions that exactly or closely offer solutions to the current problem.
- 3.3 Use methods such as brainstorming, mental mapping, role plays, and butcher's paper sessions to propose suitable solutions and to compile feasible suggestions for a communications problem for which no acceptable solution exists.

<b>Learning outcome 4</b>	<b>Compare and evaluate possible technical solutions to a nominated communications problem.</b>
<b>Assessment criteria</b>	<p>4.1 Examine the proposed solution(s) against the system's specifications for a nominated communications problem for which no acceptable solution exists, to determine the overall viability of the proposal in terms of:</p> <ul style="list-style-type: none"><li>- The nature of data to be communicated</li><li>- The data rate of the data to be communicated</li><li>- The required reliability of the communication system</li><li>- The required human-machine interfaces</li><li>- Hardware and software requirements</li><li>- Budget limits and time constraints.</li></ul> <p>4.2 Draft, validate and present a final report detailing:</p> <ul style="list-style-type: none"><li>- The research project's aims, objectives and criteria</li><li>- The processes used in the research project</li><li>- Results of research work</li><li>- The final assessment of the viability of the proposed solution(s).</li></ul>
<b>8. Delivery of the module</b>	
<b>Delivery strategy</b>	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.
<b>Resource requirements</b>	Resources should be sufficient for students to carry out learning activities on an individual basis. This will require the following: <ul style="list-style-type: none"><li>• Access to relevant journals, textbooks and other reference materials.</li><li>• Access to the Internet via a suitable search engine.</li><li>• Address(es) by guest speakers expert in the field would be an advantage.</li></ul>
<b>Occupational health and safety requirements</b>	A safe and healthy environment will be provided for students and teachers as well as the particular safety procedures followed as part of the learning / teaching activity and content.