

1. Module details**Module name****PC Hardware and Configuration****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 36 – 40 hours.

Module code

NUE076

Discipline code

0703110

2. Module purpose

This module will provide the student with the skills and knowledge necessary to install common hardware and software, and provide PC system level support. It also provides the skills and procedures to be able to test and replace boards in PC systems.

3. Prerequisites

NUE110 – Introduction to Applications Software

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 EEQSBA.

5. Content**1. Introduction**

- laboratory familiarisation
- electrical and mechanical safety
- identification and use of hand tools

2. Computer PC hardware

- motherboard/s and their major components
- power supplies
- keyboards
- monitors and video adaptors
- disk drives
- printers
- memory – primary, secondary (media and recording techniques), cache
- additions, ie. mouse, CD ROM, etc.
- configuration documentation – DIP switch settings
- diagnostic software
- analysis of user requirements

3. Operating systems

- types of operating systems and versions thereof
- file and data structures
- file naming conventions
- directory structures and access
- operating system bootstrapping process
- operating system commands
- basic concepts of batch (startup) files and their use
- basic concepts of configuration files

4. Skills

- digital component identification
- socket type integrated circuit removal and insertion
- cable troubleshooting and repair
- using technical service data

5. Instruments

- introduction to the Digital Multimeter
- in-circuit voltage measurements
- continuity and resistance measurements

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

Describe the basic concepts of PC’s and their configurations

Assessment criteria

- 1.1 Describe the basic concepts of a Personal Computer.
- 1.2 Explain the meanings of words and terms used in relation to PC’s
- 1.3 Identify the components that make up a minimum system unit.

Learning outcome 2	Identify, explain the functions and list the common hardware components of a typical PC system
Assessment criteria	<p>2.1 Recognise and list the names of the items on a typical PC motherboard.</p> <p>2.2 Briefly describe the function of the major components on the PC motherboard.</p> <p>2.3 Identify and describe the function of the peripheral components and their interconnection with the PC. These include the – power supplies (DC and AC), monitor and adapter card, disk drives and adapter cards, keyboard, printer and other sundry devices.</p>
Learning outcome 3	Be familiar with the concepts of bootstrapping procedures from the time the computer is turned on, to the time that the system is ready to accept commands
Assessment criteria	<p>3.1 List and describe the sequence of events that occur when a PC is powered on through to the time that it is ready for commands.</p> <p>3.2 Identify any error messages or signals that may occur during power up sequence.</p>
Learning outcome 4	Effectively use the system's Operating System (OS) commands and utility programs to communicate between the user and the various hardware devices.
Assessment criteria	<p>4.1 Explain the basic concepts of an Operating System.</p> <p>4.2 Explain the various types of Operating Systems that can be used on a typical PC.</p> <p>4.3 Set up a directory structure for the storage and retrieval of files/application programs.</p> <p>4.4 Perform a set of tasks using system commands that involve the manipulation of files/data to or from a disk drive, printer and other related I/O devices.</p> <p>4.5 Explain briefly the concepts of system 'startup' and batch files.</p> <p>4.6 List and explain the function of configuration file/s in a typical PC.</p>

Learning outcome 5	Demonstrate the techniques and methods used for removal and replacement of computer sub-assemblies
Assessment criteria	<p>5.1 Describe electrical and mechanical safety procedures.</p> <p>5.2 Demonstrate the use of hand tools.</p> <p>5.3 Describe and locate the components that comprise a microcomputer system.</p> <p>5.4 Demonstrate the use of I.C. insertion/removal tools.</p> <p>5.5 Describe the use of technical service data in computer service.</p> <p>5.6 Demonstrate the insertion and removal of computer circuit boards.</p>
Learning outcome 6	Demonstrate the use of a digital multimeter to test computer sub-assemblies
Assessment criteria	<p>6.1 Demonstrate the use of a multimeter for cable troubleshooting.</p> <p>6.2 Demonstrate the use of a multimeter to test computer system supply voltages.</p>
8. Delivery of the module	
Delivery strategy	<p>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.</p>
Resource requirements	<p>Resources should be sufficient for students to carry out learning activities on an individual basis.</p> <p><i>Suggested Learning Resource:</i> Appropriate technologies, hardware and software</p>
Occupational health and safety requirements	<p>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.</p>