Systems and Principles Unit Syllabus

Level 3 Testing ICT systems 3

7540-321

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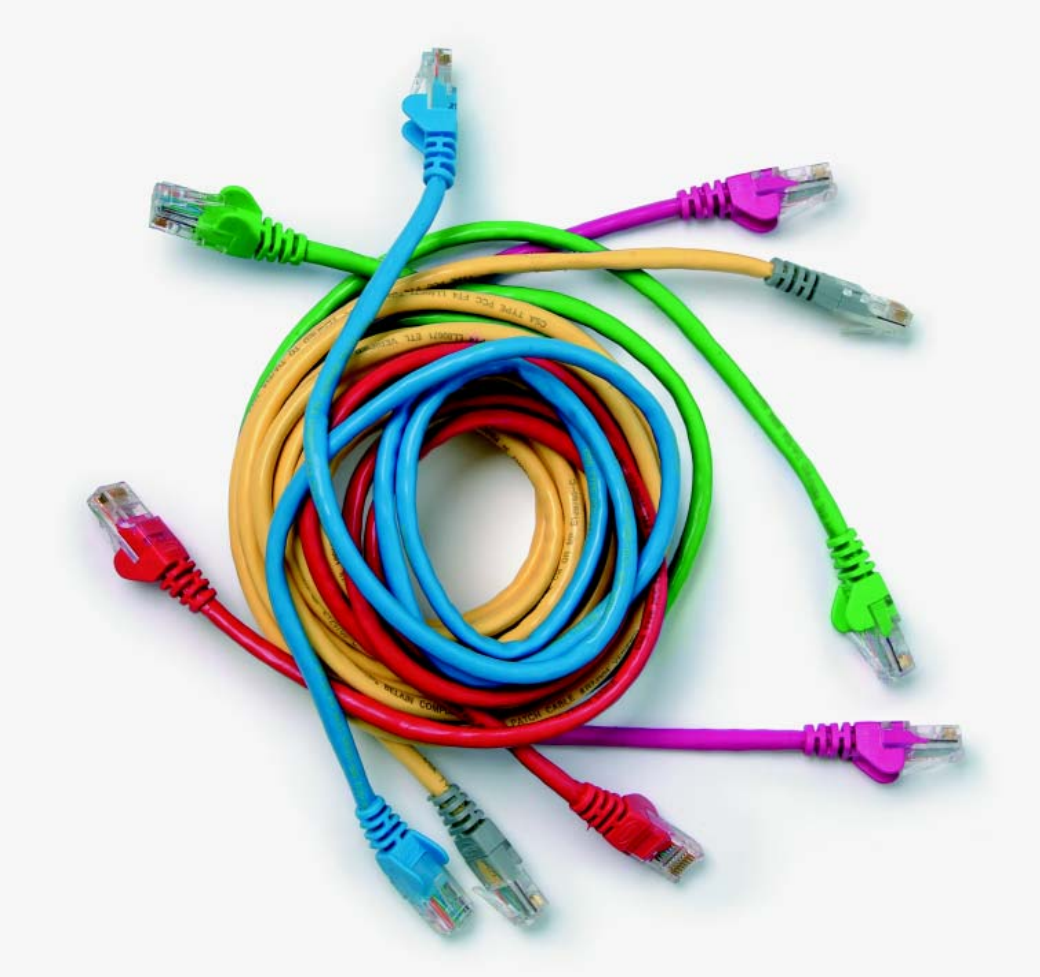
September 2010
Version 1.0



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Unit 321 Testing ICT systems 3

Syllabus Overview

Unit accreditation number **R/501/3998**

Credit value **11**

Rationale

This unit will enable the candidate to plan, select and implement IT system tests. By the end of the unit, candidates will be able to devise standard testing procedures for stand-alone and networked systems using existing test hardware and software; they will also be able to select and apply test procedures for particular situations, compare the results with benchmarks and make recommendations for further action.

N.B**.** The centre will be required to provide the candidate with documentation specific to the system being used for training, in order that the candidate can make realistic decisions to include in the software installation plans (see outcomes 1.1. and 2.3).

Learning outcomes

There are **four** outcomes to this unit. The candidate will be able to:

- Plan and produce standard testing procedures
- Select tests and determine expected results
- Identify and manage consequences of testing
- Apply tests and analyse results

Guided learning hours

It is recommended that **60** hours should be allocated for this unit. This may be on a full time or part time basis.

Connections with other qualifications

This unit contributes towards the knowledge and understanding required for the Level 3 Diploma in ICT Professional Competence.

Assessment and grading

Assessment will be by means of a **set assignment** covering both practical activities and underpinning knowledge.

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Outcome 1 Plan and produce standard testing procedures

Practical activities

The candidate will be able to:

1 use manufacturer's test and product information (supplied by trainer and/or downloaded from the Internet) to devise test plans for systems and equipment, eg

- a performance testing
- b security testing (virus, firewalls, passwords)
- c load distribution tests
- d transmission tests
- e peripheral devices (printers, scanners etc)
- f stress testing

2 determine acceptable tolerances for test results to indicate serviceable and faulty components in systems

3 produce a standard test plan to include, eg

- a expected results and conclusions
- b fault diagnosis guidance.

Underpinning knowledge

The candidate will be able to:

1 describe the benefits of effective standard testing procedures, eg effects on
   - a labour costs
   - b materials costs
   - c system down time
   - d reliability

2 describe the main features of a testing plan
   - a reason for the test
   - b personnel involved
   - c location of the test
   - d environmental considerations
   - e system configuration required
   - f likely outcomes
   - g impact on normal system operations
     - i disruption
     - ii down time
     - iii slow down
     - iv risk of data loss
   - h timings
   - j possible consequences of testing procedure
   - k projected cost of testing
   - l safety considerations
   - m software/hardware required
   - n exact details of tests to be carried out with reasons for any changes to standard procedures
   - p benchmark against which the system is to be measured

3 explain the importance of discussing the testing plan with the customer eg
   - a customer needs to know detail such as, likely disruption, timing, security issues etc in order to make arrangements to minimise the effects on his/her organisation
   - b customer needs to know the cost to justify a decision to go ahead or to take an alternative course of action
   - c customer needs to be reassured that the procedure is necessary.

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Outcome 2 Select tests and determine expected results

Practical activities

The candidate will be able to:

1 identify and record details of system hardware and software configuration settings eg
   - a BIOS settings
   - b operating system configurations
   - c background programs (eg virus monitor, system monitor, firewall, etc) enabled/disabled
   - d task scheduler settings
   - e modem settings
   - f relevant software application configurations

2 clarify the nature of any known problems by discussion with the user

3 identify a test plan (supplied by trainer) that will enable a diagnosis to be made.

Underpinning knowledge

The candidate will be able to:

1 describe methods and procedures for identifying system hardware, software and configuration settings
   - a physical check of hardware connections, links, manufacturer's labels etc
   - b system information utilities in operating systems
   - c properties/configuration menu in software applications

2 state the main characteristics of typical system hardware and software

3 identify common sources of information for system hardware and software
   - a software on-board help and read-me files
   - b software/hardware manufacturers' website
   - c manufacturers' manuals and technical bulletins
   - d locally produced system-specific records
   - e maintenance logs
   - f other text books and technical publications.

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Outcome 3 Identify and manage consequences of testing

Practical activities

The candidate will be able to:

1 identify tests which may affect system data, software and configuration by consulting
   a test software information (eg stress tests, performance monitoring etc)
   b test procedures
   c operating system information
2 back-up and restore system software
3 record and reinstate system configuration and hardware settings
4 record and reinstate user settings and customisations.

Underpinning knowledge

The candidate will be able to:

1 identify tests with possible adverse consequences eg
   a stress/burn-in tests
   b tests involving data input
   c tests involving configuration changes (software or hardware)
   d tests involving temporary replacement of hardware components
   e measurement of electrical variables
2 describe the effects of testing eg
   a data loss
   b system down time
   c loss of configuration and user settings
   d corruption of software/operating system files
   e corruption of databases
   f disruption to user's business operations
3 describe typical actions to be taken to avoid adverse consequences of tests
   a back-up and restoration of data
   b advising and seeking user permission for down time
   c recording and reinstating system configuration and hardware settings
   d recording and reinstating user settings and customisations
   e back-up and restoration of software/operating system
   f negotiating time for testing.

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Outcome 4 Apply tests and analyse results

Practical activities

The candidate will be able to:

1 use diagnostic and testing software including vendor supplied, third party and operating system utilities, eg
   - a burn-in/stress test software
   - b virus monitor/scanner
   - c network analysers
   - d protocol analysers
   - e operating system utilities
   - f system and resource monitors
   - g disk scan and repair software

2 use functions of anti-virus and anti-spyware utilities eg
   - a scanning
   - b quarantine
   - c disinfect
   - d rescue
   - e threat-specific detection/removal tools

3 use test equipment, hardware and accessories eg
   - a digital and analogue multimeters
   - b loop-back connectors
   - c cable testers

4 implement tests, eg
   - a stress/burn-in tests
   - b tests involving data input
   - c tests involving configuration changes (software or hardware)
   - d tests involving temporary replacement of hardware components
   - e tests involving connection of test equipment

5 compare actual test results with expected results

6 draw conclusions from test results and disseminate information.

Underpinning knowledge

The candidate will be able to:

1 describe the purpose and function of commonly available testing hardware and software eg

- a digital and analogue multimeters
- b loop-back connectors
- c bit error rate tester
- d burn-in/stress test software
- e virus monitor/scanner
- f network analysers
- g protocol analysers
- h operating system utilities
- j system and resource monitors
- k disk scan and repair software

2 describe when and where to use different types of diagnostic, hardware and software

3 describe how to draw conclusions from actual and expected test results, based on a comprehensive knowledge of system characteristics and performance.

Unit record sheet

Use this form to track your progress through this unit.

Tick the boxes when you have covered each outcome. When they are all ticked, you are ready to be assessed.

Outcome	✓	Date
1 Plan and produce standard testing procedures	☐	
2 Select tests and determine expected results	☐	
3 Identify and manage consequences of testing	☐	
4 Apply tests and analyse results	☐	

Candidate Signature ..... **Date** .....

City & Guilds Registration Number .....

Quality nominee (if sampled) ..... **Date** .....

Assessor Signature ..... **Date** .....

External Verifier Signature (if sampled) ..... **Date** .....

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