Unit Title:	**Principles of ICT system and data security**
OCR unit number:	26
Unit reference number:	R/601/3509
Level:	3
Credit value:	9
Guided learning hours:	75

Unit aim

The aim of this unit is that learners will:

- Understand the common types of threat to ICT systems and data
- Understand how to protect ICT systems
- Understand the applications of cryptography to ICT systems and data

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
The Learner will: 1 Understand the common types of threat to ICT systems and data	**The Learner can:** 1.1 Describe common types of physical threats to ICT systems and data (hardware damage, loss and theft) 1.2 Describe common types of electronic threats to ICT systems and data (e.g. denial of service, data theft or damage, unauthorised use) 1.3 Explain the security vulnerabilities associated with remote access technologies (including wireless)	• security threats associated with the following: - weak external security on LAN - unauthorised use of a system without damage to data - poorly protected passwords - unauthorised removal or copying of data or code from a system - damage to or destruction of data or code inside or outside the system - hardware and media loss or theft - unauthorised access through internet connections - risks from disasters or other unforeseen events - file permissions - hackers, both external and internal inside and out

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
		• The Data Protection Act and the effects it has on organisational procedures and the sharing of such data with third parties, especially those external to the UK. They should also understand the purpose of the Computer Misuse Act
2 Understand how to protect ICT systems	2.1 Describe methods of providing physical access control and security for ICT systems (locks, biometric controls, CCTV, shielding, fire detection and control) 2.2 Describe methods of providing electronic access control and security for ICT systems (firewalls, virtual networks, secure connection/transfer protocols, secure wireless connection) 2.3 Differentiate the following Access Control methods: • Mandatory • Discretionary • Role Based 2.4 Describe the operation of common types of malicious code: • Virus • Trojan • Logic Bomb • Worm • Spyware 2.5 Describe the characteristics of strong passwords and methods of attacking password-protected systems	• how to protect an organisation's ICT systems including: - physical security - access control - hardware mechanisms - backing up and restoring data back up - security protocols

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
3 Understand the applications of cryptography to ICT systems and data	3.1 Describe cryptographic algorithms: • Hashing • Symmetric • Asymmetric 3.2 Describe how cryptography can be applied to ICT system and data security in terms of: • Confidentiality • Integrity • Authentication • Non-repudiation • Access Control 3.3 Explain the operation of Public Key Infrastructure (PKI) 3.4 Explain the concepts of the Key Management and Certificate lifecycles	• cryptographic algorithms • how cryptography can be applied to ICT system and data security • the operation of PKI • the concepts of Key Management and Certificate lifecycles

Assessment

The qualification has been designed to develop knowledge, understanding and skills in the full range of functions involved in the planning and control, hardware, software and systems installation, software solutions and the production of customer support materials. It also provides opportunities for learners to study towards system and network management, to specialise in one or more specific programming languages in addition to being able to take units that are vendor specific.

Each unit within the specification is designed around the principle that candidates will build a portfolio of evidence relating to progression towards meeting the unit assessment objectives.

The unit assessment objectives reflect the demands of the learning outcomes for each unit.

In order for candidates to be able to effectively progress towards meeting the requirements of each assessment objective, tutors must make sure that the supporting knowledge, understanding and skills requirements for each objective are fully addressed. The identified knowledge, understanding and skills are not exhaustive and may be expanded upon or tailored to particular contexts to which the unit is being taught and the assessment objective applied.

We recommend that teaching and development of subject content and associated skills be referenced to real vocational situations, through the utilisation of appropriate industrial contact, vocationally experienced delivery personnel, and real life case studies.

All the learning outcomes and assessment criteria must be clearly evidenced in the submitted work, which is externally moderated by OCR.

Results will be Pass or Fail.

Guidance on assessment

Candidates do not have to achieve units in any particular order and tutors should tailor learning programmes to meet individual candidate needs. It is recommended that, wherever possible, centres adopt a holistic approach to the delivery of the qualification and identify opportunities to link the units.

Centres are free to deliver this qualification using any mode of delivery that meets the needs of their candidates. Whatever mode of delivery is used, centres must ensure that learners have appropriate access to appropriate resources and consider the candidates' complete learning experience when designing learning programmes. This is particularly important in relation to candidates studying part time alongside real work commitments where candidates may bring with them a wealth of experience that should be utilised to maximum effect by tutors and assessors.

It is difficult to give a detailed answer to how much evidence is required as it depends on the type of evidence collected and the judgement of assessors. The main principles, however, are as follows: for a candidate to be judged competent in a unit, the evidence presented must satisfy:

- all the items listed, in the section 'Learning Outcomes'
- all the areas in the section 'Assessment Criteria'

Questioning the candidate is normally an ongoing part of the assessment process, and is necessary to:

- test a candidate's knowledge of facts and procedures
- check if a candidate understands principles and theories and
- collect information on the type and purpose of the processes a candidate has gone through
- candidate responses must be recorded

The quality and breadth of evidence provided should determine whether an assessor is confident that a candidate is competent or not. Assessors must be convinced that candidates working on their own can work independently to the required standard.

Additional information

For further information regarding administration for this qualification, please refer to the OCR document *'Admin Guide: Vocational Qualifications'* on the OCR website www.ocr.org.uk .

