

National Unit Specification: general information

UNIT Computing: Install and Maintain Computer Software (SCQF level 5)

CODE F1KP 11

SUMMARY

This Unit is designed to enable candidates to correctly install and configure system and application software on a computer system. The Unit will provide candidates with information about the range of system software, such as operating systems, the wide variety and classification of application software, such as word processors and the methods of obtaining software and the legal issues involved. The Unit will give candidates practical experience in installing system and application software within legal constraints. The contents of the Unit include planning and preparation for software installation, identification and understanding of manufacturer system requirements, software installation and maintenance of software installations.

This Unit is suitable for candidates who have an interest in computer software or who are undertaking a course of study in computing.

OUTCOMES

- 1 Identify types and features of software products and types of software legislation and licensing.
- 2 Install and configure system software and application software.
- 3 Update and troubleshoot installed software.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, it would be beneficial if candidates possessed basic IT skills. This may be evidenced by possession of:

D01D 10 *Information Technology (Intermediate 1)*

or equivalent qualifications or experience.

Administrative Information

Superclass: CD

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CREDIT VALUE

1 credit at Intermediate 2 (6 SCQF credit points at SCQF level 5*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

While there is no automatic certification of Core Skills in Unit there may be opportunities for developing aspects of Core Skills.

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Identify types and features of software products and types of software legislation and licensing.

Performance Criteria

- (a) Identify types and features of system software.
- (b) Identify types and features of application software.
- (c) Identify methods of software distribution and legal issues involved.
- (d) Identify methods of software registration and the benefits of registration.
- (e) Identify types of installation media and common file types encountered during software installation.
- (f) Identify software installation concepts.

OUTCOME 2

Install and configure system software and application software.

Performance Criteria

- (a) Identify manufacturer's system requirements for software installation.
- (b) Install and configure system software.
- (c) Install and configure application software.
- (d) Installed software is tested and documented.

OUTCOME 3

Update and troubleshoot installed software.

Performance Criteria

- (a) Update system software.
- (b) Update application software.
- (c) Software problems are accurately identified and reported.
- (d) Software problems are correctly resolved.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required that candidates have achieved all Outcomes and Performance Criteria.

Candidates are encouraged to use the Internet in any research etc, however, the evidence produced must be the candidate's own words. Assessors should assure themselves of the authenticity of candidate's evidence.

Written and/or oral recorded, performance and product evidence is required which demonstrates that the candidate has achieved the requirements of all of the Outcomes and Performance Criteria.

For Outcome 1 written and/or oral recorded evidence is required which demonstrates that the candidate has achieved the standard specified in the Outcome and Performance Criteria. The assessment will be supervised, controlled and under closed-book conditions and should last no more than 45 minutes. The instrument of assessment will provide opportunities for the Outcome to be fulfilled by means of sampling across the range of the content of Outcome 1. Where re-assessment is required it should contain a different sample from the range of mandatory content. Achievement can be decided by use of a cut-off score. Each sample must include the following:

- ◆ Identify at least **two** types **and** features of system software
- ◆ Identify at least **two** types **and** features of application software
- ◆ Identify at least **two** methods of software distribution
- ◆ Identify at least **two** legal issues involved in software distribution
- ◆ Identify at least **one** method of software registration
- ◆ Identify at least **one** benefit of software registration
- ◆ Identify at least **two** types of installation media **and** common file types used for software installation
- ◆ Identify at least **two** software installation concepts.

Performance evidence is required for Outcomes 2 and 3. Evidence will be in the form of an activity log and an assessor observation checklist. Each candidate will produce documentation recording their performance with this assessment being carried out under supervised and controlled conditions. Candidates will have access to notes and reference work as well as on-line help for this assessment. The activity log entries will cover the following:

- ◆ Identification of manufacturer's system requirements for software installation
- ◆ Installation and configuration of system software
- ◆ Installation and configuration of application software
- ◆ Installed software is tested and documented
- ◆ System software is updated
- ◆ Application software is updated
- ◆ Software problems are accurately identified and reported
- ◆ Software problems are correctly resolved.

The activity log should be completed by the candidate to show that they have undertaken all the tasks. An assessor must endorse each candidate activity log with their name, signature and the relevant date(s).

National Unit Specification: statement of standards (cont)

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The assessor observation checklist will be used to record that all the tasks have been undertaken correctly by the candidate. An assessor must endorse each checklist with the candidate's name, their name, signature and date.

The Assessment Support Pack (ASP) for this Unit provides sample assessment materials including assessor checklists, practical tasks and an instrument of assessment for the knowledge. Centres wishing to develop their own assessments should refer to the Assessment Support Pack to ensure a comparable standard.

National Unit Specification: support notes

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This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

The precise content of this Unit will change over time, as computing technology develops and new devices are introduced. The following guidance exemplifies the standards in terms of contemporary technology.

The overall aim of this Unit is to enable candidates to install, configure and update a range of systems software and application software. The Unit will provide candidates with information about the different types and features of computer software and the various methods of obtaining software. The candidate will also be made aware of the legal implications concerning software licensing. The broad context of this Unit is the rapidly changing technologies involved in modern software installation and configuration.

This Unit should ideally be delivered over an extended period of time to give candidates the opportunity to install and configure a varied range of system software and application software.

Outcome 1

This Outcome relates to identifying the features of system and application software and the methods of obtaining software. Candidates should be aware of the classification of software. For this Unit, the basic division will be system software and application software.

Performance Criterion (a) relates to the identification of the features of system software. System software will be defined as software that allows a user to effectively and efficiently use computer systems, ie hardware. Examples of system software include operating systems, device drivers, plug-ins and utility software. Candidates should be able to describe firmware, ie system software stored on non-volatile storage such as integrated circuits.

Performance Criterion (b) relates to the identification of the features of application software. Application software will be defined as computer programs that allow a user to perform a particular real-time task or tasks. Examples of application software will include business software, program development environments, educational software, graphics software and games. Candidates should be able to identify the functions of application software, eg a spreadsheet can be used for keeping accounts.

Performance Criterion (c) relates to the different methods of legally obtaining software. This will cover commercial (off-the-shelf) software, shareware and freeware methods of obtaining software. This will also cover current legislation with regards to software such as the Copyright, Designs and Patents Act. Candidates will also examine software licensing and End User Licence Agreements (EULA).

National Unit Specification: support notes (cont)

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Performance Criterion (d) relates to the different methods of software registration, eg on-line and off-line, and will examine the reasons for and the benefits of software registration. This will include the registration process and examine the methods of software copy protection, including product keys and serial numbers.

Performance Criterion (e) relates to the different types of file that may be encountered by a candidate when carrying out an installation. For example, text files and html files, such as readme files incorporate vital installation and setup information, whereas setup and install executable files will invoke the installation procedure. Identification of compressed or zipped files and the need for these should also be included.

Outcome 2

This Outcome relates to the planning, installation and configuration of systems software and application software. This is a practical outcome and will involve candidates in the installation and configuration of a range of system software and application software. There will be scope to examine the emergence of Rich Internet Application (RIA) software and also the increasing number of portable software applications that can be installed and executed from removable media such as flash drives.

The identification and adherence to items commonly found in manufacturer's minimum system recommendations. This will typically include operating system, processor, RAM size, free hard disk space, monitor, pointing device, disk drives and other requirements, eg sound card. This will also include the differentiation between default and custom installations. This will also include the description of sources of installation files, eg CD-ROM, download and network software distribution.

The installation and configuration of system software to be installed will include different types of operating system and a variety of other systems software including device drivers, plug-ins and also utility software such as anti-virus software and firewall software.

The installation and configuration of application software to be installed will include a range of application packages from business software, including word processor, spreadsheet and database, to program development environments, educational software, graphics software and games.

The testing and documentation of installed software requires candidates to test that the software installed is fit for purpose and working correctly. For system software, this may be the running of system programs to check hardware performance. For application software, the candidate will be required to start the application, open a file, make changes, save a file and possibly print the file. As far as the test for 'make changes' is concerned candidates would be provided with the appropriate information to carry out the test, eg some lines of program code to enter into a programming environment to make sure that it is working correctly. The documentation produced could include any tests carried out.

Outcome 3

This Outcome relates to the on-going maintenance and the troubleshooting of problem software installations. Candidates will be required to monitor software installations, correctly diagnose and record faults and then resolve the faults.

National Unit Specification: support notes (cont)

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Monitoring systems to make sure that system software is up-to-date and where appropriate the candidate will perform the updates. Updates for system software may include the application of service packs and patches and involve the regular downloading and updating of critical security updates, which may include virus and anti-spyware definitions.

Responding to the release of new versions of application software or new features or revisions to existing software will be required to keep application software up-to-date and maintain version control records.

The identification and accurate reporting of software problems describing different problems, errors and their effects. The problems and errors could include insufficient hard disk space or memory, file(s) already existing, corrupted file(s), missing file(s) and software conflicts with other software. The effects could include system slowdown, extended boot time, system instability, changes in memory usage and changes in system security. The candidate will be required to maintain, and realise the importance of, keeping up-to-date and accurate records of installation, fault finding and resolution.

With regards to the correction of software installation errors and faults, corrective action should be taken by the candidate to resolve the user's problem. This resolution may include making backups of important data before any changes take place, making changes to system configurations, reconfiguring other software and uninstalling and reinstalling problem software.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

A practical hands-on approach to learning should be adopted to engage learners and exemplify key concepts. However, all practical activities should be underpinned with appropriate knowledge before candidates commence these activities.

It is recommended that students gain hands-on installation and configuration experience of at least one example of each type of software mentioned in these notes. While teaching will necessarily focus on a specific product, the generic features of the class of software should be emphasised. An important outcome for this Unit is that candidates develop an appropriate technical vocabulary, terminology and underpinning knowledge should be introduced in a practical context.

The actual distribution of time between Outcomes is at the discretion of the centre. However, one possible distribution of time is:

Outcome 1	8 hours
Outcome 2	24 hours
Outcome 3	8 hours

The use of virtual machines could be used effectively for the teaching and assessment of this Unit.

This Unit may be delivered stand-alone or in conjunction with other Units. Where it is delivered alongside other Units, there is an opportunity to contextualise this Unit in terms of the contents of the other Unit(s) since this Unit's contents are generic and may be contextualised in a variety of ways.

National Unit Specification: support notes (cont)

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OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

This Unit involves candidates installing software, updating and troubleshooting. This may give opportunities for candidates to gather evidence towards the core skill of problem solving. There may also be opportunities for candidates to gather evidence for the IT core skill.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

An integrative approach has been taken with the three Outcomes being assessed through two instruments of assessment. The first assessment instrument covers Outcomes 1, and the second assessment instrument relates to Outcomes 2 and 3.

The assessment for Outcomes 1 may be in the form of an objective test consisting of a suitable number and range of questions to cover all of the Performance Criteria. It is anticipated that this assessment will be carried out towards the end of the Unit once candidates have had an opportunity to acquire the essential knowledge and understanding required to give them a realistic prospect to pass the assessment. It is recommended that each Performance Criteria is sampled equally.

If a centre is presenting Outcome 1 of these assessments on-line the following assessment methods, where appropriate, may be selected –

- Multiple choice
- Drag and drop
- Multiple response
- Mix and match
- Or a combination of the above

The assessments for Outcomes 2 and 3 are practical assessments consisting of observation of the candidate over an extended period of time during which the candidate is required to maintain an activity log. It is recommended that this assessment is started as soon as the candidate has acquired the necessary knowledge and skills to permit him/her to commence appropriate tasks.

The assessment of knowledge and understanding (Outcomes 1) may be assessed using written and/or oral recorded questions. The practical assessments for Outcome 2 and Outcome 3 may be assessed using an activity log. This activity log could either be paper based or stored in a digital repository (such as an e-portfolio or web log).

The activity log should be completed by the candidate to show that they have undertaken all the tasks. An assessor must endorse each candidate activity log with their name, signature and the relevant date(s).

The assessor observation checklist will be used to record that all the tasks have been undertaken correctly by the candidate. An assessor must endorse each checklist with the candidate's name, their name, signature and date.

National Unit Specification: support notes (cont)

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CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).