



## National Unit specification

### General information

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

**Unit code:** H980 44

**Superclass:** CA

**Publication date:** June 2015

**Source:** Scottish Qualifications Authority

**Version:** 01

### Unit purpose

This Unit is designed to introduce learners to the skills and knowledge required to refurbish and recycle a computer. It is intended for the beginner who wants to acquire foundation knowledge and skills in this area.

Learners will be introduced to the reasons for the refurbishment and recycling of computers, learn about health and safety procedures when refurbishing and recycling computer hardware, and be able to repair and re-use a desktop computer.

The Unit also provides an introduction to data protection and related legislations. The learner will be able to demonstrate how to locate and remove data safely.

This Unit is a mandatory Unit within the National Progression Award in Computer Refurbishment at SCQF level 4. As the Unit introduces learners to the basic hardware of a computer system, it is a suitable foundation Unit for a wide range of computing based qualifications, such as the National Unit entitled *Setting Up a Computer* (SCQF level 4), which is also part of the NPA in Computer Refurbishment.

### Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Identify the components of a computer.
- 2 Refurbish a computer.
- 3 Recycle a computer.

## **National Unit specification: General information (cont)**

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

### **Credit points and level**

1 National Unit credit at SCQF level 4: (6 SCQF credit points at SCQF level 4)

### **Recommended entry to the Unit**

Entry is at the discretion of the centre. Learners undertaking this Unit do not need prior knowledge or experience of computers. However, it would be advantageous if learners possessed basic IT skills.

### **Core Skills**

There is no automatic certification of Core Skills or Core Skill components in this Unit.

### **Context for delivery**

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes. This Unit is part of the National Progression Award in Computer Refurbishment at SCQF level 4.

### **Equality and inclusion**

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

## **National Unit specification: Statement of standards**

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

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 SQA.

### **Outcome 1**

Identify the components of a computer.

#### **Performance Criteria**

- (a) Identify the main hardware components of a computer system.
- (b) Identify the main software components of a computer system.
- (c) Identify peripherals and backing storage of a computer system.
- (d) State operational concepts of computers and peripherals.
- (e) State concepts of system, firmware and application software.
- (f) Use terminology and Units of measurement correctly and appropriately.

### **Outcome 2**

Refurbish a computer.

#### **Performance Criteria**

- (a) State the benefits of refurbishment.
- (b) Carry out an inspection of a computer.
- (c) Decide if a computer should be refurbished or recycled.
- (d) Disassemble and clean a computer.
- (e) Carry out data cleaning.
- (f) Re-assemble and re-connect a computer.
- (g) Re-install systems and applications software.
- (h) Test re-assembled system to ensure correct operation.
- (i) Adhere to correct health and safety procedures for refurbishing a computer.

### **Outcome 3**

Recycle a computer.

#### **Performance Criteria**

- (a) State the benefits of recycling.
- (b) Select the components that can be recycled.
- (c) Remove, clean, test and log recycled components.
- (d) Remove data safely and delete or copy it as required.
- (e) Adhere to current legislation relating to recycling and disposal of a computer.

## National Unit specification: Statement of standards (cont)

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

### Evidence Requirements for this Unit

Evidence is required to demonstrate that learners have achieved all Outcomes and Performance Criteria.

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

The evidence for this Unit may be written, oral, performance based, product or a mix of these. Evidence may be stored in a range of media. Evidence may be captured, stored and presented in a range of media (including audio and video) and formats (analogue and digital).

Evidence of cognitive competence may be sampled across the knowledge domain defined by this Unit specification, so long as the sample is unknown to the user.

Given the level of this Unit, the amount of evidence, and corresponding time spent on assessment, should be minimised but sufficient to satisfy the Performance Criteria. Whenever possible, evidence should be a naturally occurring by-product of teaching and learning. However, it must be produced by the learner. Authentication must be used where this is uncertain.

Evidence must be provided of **cognitive competence** and **practical competence**.

The evidence of **cognitive competence** must include Outcome 1 (all Performance Criteria), Outcome 2 (Performance Criteria a, c), and Outcome 3 (Performance Criterion a). Additional evidence of cognitive competence may be provided for underpinning knowledge for the practical Performance Criteria (such as knowledge of legislation). If sampling is used, the evidence must be produced under controlled conditions with the sample unknown and with no access to reference material.

The evidence of **practical competence** will relate to Outcome 2 (PCs b, d–i) and Outcome 3 (PCs b–e). Evidence of practical competence may not be sampled. It is sufficient for candidates to refurbish at least **one** computer and recycle at least **five** components. The recycled components may include basic hardware such as keyboards and pointing devices. Recycling should be carried out with little or no assistance. There are no time requirements. Photographic or video evidence of practical competence is acceptable. There is no requirement to retain the recycled parts of a refurbished computer.

The Guidelines on Approaches to Assessment (see the Support Notes section of this specification) provide specific examples of instruments of assessment.



## National Unit Support Notes

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

Unit Support Notes are offered as guidance and 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 purpose of this Unit is to introduce learners to the necessary skills required to refurbish and recycle a computer, and to provide foundation knowledge of the functional elements of a computer system.

This Unit may be delivered as a stand-alone Unit or in combination with the *Setting Up a Computer* Unit as the two Units make up the National Progression Award in Computer Refurbishment at SCQF level 4.

#### Outcome 1

A key objective of this Unit is to ensure the learner is aware of and can identify the main components of a computer system including the processor, RAM and ROM; Input and output devices including keyboard, mouse, microphone, monitor, speakers and printer and the backing storage available including USB flash drive, portable hard disk drive and solid state drive. The learner should be aware of categories of software and purpose: system software including the operating system and utilities, firmware programs that have been written on read-only memory (ROM) and that firmware is a combination of software and hardware, applications software, which is designed to carry out operations for a specific task and that application software cannot run by itself but is dependent on system software.

## National Unit Support Notes (cont)

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

### Outcomes 2 and 3

The emphasis for this Unit is to refurbish and recycle a computer. It is important that learners work in a safe and responsible manner for the practical tasks. The main safety procedures expected from learners when refurbishing and recycling a computer are:

- ◆ disconnect completely from mains
- ◆ beware of sharp edges and small pins on boards inside computer base cover
- ◆ use disposable gloves and masks where appropriate
- ◆ do not clean any part of the computer with liquid detergents
- ◆ use an anti-static strap when touching components inside the computer base cover

The main safety procedures that learners should be aware of when assessing a safe work area are in the Health and Safety at Work etc. Act 1974.

An important aim of the Unit is to provide the learner with hands-on experience of working with a computer system and the Outcomes allow this by the learner carrying out practical tasks such as:

- ◆ inspect computer externally to check it is complete and secure
- ◆ disassembly of a computer (eg removal of computer base Unit cover)
- ◆ visual internal inspection for damage and that parts are secure (use disposable gloves and masks where appropriate)
- ◆ cleaning a computer internally
- ◆ dust extraction
- ◆ removal of loose items or tighten loose parts
- ◆ installing a hardware component in to a computer system
- ◆ re-assembly and external cleaning of a computer

The choice of this hardware component is at the discretion of the centre. The learner must be aware of health and safety factors when carrying out practical tasks.

The learner should power up the computer to ensure that it works, check for speed, size of hard disk, memory and set up information. The learner should test drives to check working order and identify any faulty parts. The learner should be able to identify hard drives of lower than required specification, RAM and clock speeds that may not be suitable for refurbishment (for example, hard drive less than 20GB, RAM less than 256MB and Clock Speeds of less than 1.4Ghz). These computers may only be suitable for recycling and should be identified as such by the learner. Learners should be aware of The Waste Electric and Electronic Equipment (WEEE) Regulations 2013 which became law in the UK on 1 January 2014 and replaced the 2006 Regulations, and The Data Protection Act 1998 when disposing of computers. The learner must be aware that to comply with Data Protection Act 1998, all data must be removed from disks, using appropriate licensed software program(such as Darik's Boot and Nuke, DBAN, a hard drive disk wipe and data clearing utility).

## **National Unit Support Notes (cont)**

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

An issuing system should be set up to facilitate learners being allocated a computer system to refurbish and/or recycle, booking out any hardware or software required to carry out tasks. All tools and facilities the learner has used should be checked and cleaned, ready for re-use. All hardware and software that the learner had booked out must be booked back in using the correct procedures.

When refurbishing and recycling a computer the learner should be aware of data storage, types of storage, purpose and retrieval. Customise the accessibility settings of a computer to meet user requirements by using menus and option settings to comply with refurbishment procedures. Be aware of protection features such as passwords, PIN and use of licensed software (Copyright, Designs and Patents Act 1988). The learner must also be aware of data protection issues as defined in the Data Protection Act 1998.

### **Progression Pathway**

On completion of this Unit learners may progress to the National Progression Award in Computer Refurbishment at SCQF level 4 or National Certificate in Computing: Technical Support at SCQF level 5, Group Award Code GD7P 45.

### **Guidance on approaches to delivery of this Unit**

The distribution of time between Outcomes is at the discretion of the centre. However, one possible approach is to distribute the available time as follows:

Outcome 1: 10 hours

Outcome 2: 15 hours

Outcome 3: 15 hours

Each element of learning should comprise of a mix of teaching and demonstrations followed by the learner carrying out a practical or knowledge task. A holistic approach to learning and teaching of Outcomes should be employed whereby learners may gain knowledge and understanding while carrying out tasks. While a learner-centred, participative and practical approach should be encouraged, learners may be offered support through one-to-one work with the assessor or student-to-student support. Assessors should observe and give verbal feedback during practical tasks with the opportunity to re-do tasks if necessary to reinforce the learning.

### **Guidance on approaches to assessment of this Unit**

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

A traditional approach to assessment would involve a short test to assess candidate's cognitive competences and observation of the candidate's practical competencies. For example, a multiple choice test could be used to assess their knowledge and understanding. An observation checklist could be used to observe their refurbishment and recycling skills.

## **National Unit Support Notes (cont)**

**Unit title:** Refurbishing and Recycling a Computer (SCQF level 4)

A more modern approach to assessment would be a web log that candidates could produce as a record of their learning and practical activities. The blog would record, on a daily or weekly basis, the development of their knowledge and skills. It would encompass cognitive and practical competences. The cognitive competences would be demonstrated in posts relating to their learning; the practical competences would be demonstrated in posts relating to their refurbishment and recycling activities, and would include photographs and videos of these activities.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met.

### **Opportunities for e-assessment**

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

### **Opportunities for developing Core and other essential skills**

No opportunities have been identified for developing Core Skills.

Broader skills development in the areas of employability, sustainable development and citizenship may be developed by emphasising these areas in learning and teaching. For instance by inviting a practitioner from small computer repair company to talk about skills required for employability in the technical support industry, explaining that recycling and refurbishment can help lead to a more sustainable society and that the choices the learner makes by informing him/herself, the roles and responsibilities s/he accepts, justifying choices in recycling and refurbishment can lead to the learner accepting a more responsible citizen's role.

## History of changes to Unit

| Version | Description of change | Date |
|---------|-----------------------|------|
|         |                       |      |
|         |                       |      |
|         |                       |      |
|         |                       |      |
|         |                       |      |
|         |                       |      |
|         |                       |      |
|         |                       |      |

© Scottish Qualifications Authority 2015

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Business Development and Customer Support team, telephone 0303 333 0330.

## General information for learners

### Unit title: Refurbishing and Recycling a Computer (SCQF level 4)

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is designed to equip you with foundation knowledge of the main hardware and software components of a computer system, health and safety procedures when recycling and refurbishing computer hardware, data protection and related regulations.

The Unit also help you develop the necessary skills to refurbish and recycle a computer by carrying out a series of practical tasks such as:

- ◆ carry out an inspection of a computer
- ◆ disassemble and clean a computer
- ◆ carry out data cleaning
- ◆ re-assemble and re-connect a computer
- ◆ re-install systems and applications software
- ◆ test re-assembled system to ensure correct operation
- ◆ select the components that can be recycled
- ◆ remove, clean, test and log recycled components
- ◆ remove data safely and delete or copy it as required

This Unit is aimed at the beginners and you do not need prior knowledge or experience in computer technical support. As the Unit introduces you to the basic hardware of a computer system, it is a suitable foundation Unit for a wide range of computing based qualifications, for instance the SCQF level 4 Unit *Setting Up a Computer*.

You will be assessed on knowledge and skills of key topics such as parts of a computer; health and safety when refurbishing and recycling a computer; using licensed software to remove data from system, including wiping of a hard drive and testing if the drive is clean.

The assessment of this Unit may take different forms. You may, for example, sit a short test of your knowledge and carry out some practical tasks. The assessment will be straightforward and will not take much time.

You may also develop skills that may lead to employment, skills in sustainable development and citizenship skills during your learning experience.