

National Unit Specification: general information

UNIT Digital Media: Audio Acquisition (SCQF level 4)

CODE F1JT 10

SUMMARY

The overall aim of this Unit is to enable candidates to capture and store sound in a digital format for use in IT applications. This Unit will provide candidates with information about the principles of analogue-to-digital and digital-to-analogue conversion that underpin the capture and use of sound in a digital system. The candidates will also be made aware of the various file formats in which digital audio is stored, the sampling rates that determine the quality of recorded sound and compression standards in common use.

Throughout the Unit candidates should have frequent exposure to common sound recording equipment, audio connectors and software so that they can set-up a system to capture and store audio to meet the standards and requirements of a given brief. This will require some equipment to be of a professional standard.

This Unit is aimed at candidates who have no previous experience of capturing and storing sound in digital formats, although it may also suit candidates who have experience of recording sound in analogue formats.

OUTCOMES

- 1 Identify the key concepts involved in the capture, conversion and storage of digital audio.
- 2 Plan the acquisition of digital audio for a specified brief.
- 3 Acquire and store digital audio for a specified brief.
- 4 Prepare and present digital audio to a specified brief.

Administrative Information

Superclass: CB

Publication date: June 2007

Source: Scottish Qualifications Authority

Version: 01

© Scottish Qualifications Authority 2007

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 Customer Contact Centre, telephone 0845 279 1000

National Unit Specification: general information (cont)

UNIT Digital Media: Audio Acquisition (SCQF level 4)

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 09 *Information Technology (Access 3)*

or equivalent qualifications or experience.

CREDIT VALUE

1 credit at Intermediate 1 (6 SCQF credit points at SCQF level 4*)

**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

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

National Unit Specification: statement of standards

UNIT Digital Media: Audio Acquisition (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 the Scottish Qualifications Authority.

OUTCOME 1

Identify the key concepts involved in the capture, conversion and storage of digital audio.

Performance Criteria

- (a) Identify the main purposes of analogue-to-digital and digital-to-analogue conversion.
- (b) Identify the impact of different sampling rates on quality of audio capture.
- (c) Identify the main purposes of different digital audio file formats.
- (d) Identify the main purposes of different file compression standards.
- (e) Identify the characteristics of different audio connectors.
- (f) Identify the characteristics of different audio convertors.

OUTCOME 2

Plan the acquisition of digital audio for a specified brief.

Performance Criteria

- (a) State the type, quantity and expected quality of digital audio for the brief.
- (b) State the possible sources for the digital audio required by the brief.
- (c) State the hardware requirements necessary to complete digital audio acquisition in accord with the brief.
- (d) State current health and safety and copyright implications for the digital audio to be acquired for the brief.
- (e) Prepare a schedule for digital audio acquisition to meet the timescales of the brief.

OUTCOME 3

Acquire and store digital audio for a specified brief.

Performance Criteria

- (a) Acquire analogue audio using appropriate recording equipment in line with the brief.
- (b) Convert analogue audio to digital audio to meet quality standards of the brief.
- (c) Acquire digital audio from digital sources.
- (d) Store digital audio in an appropriate format and named to enable efficient access and retrieval.
- (e) Acquire and store digital audio in a manner consistent with current health and safety requirements.

National Unit Specification: statement of standards (cont)

UNIT Digital Media: Audio Acquisition (SCQF level 4)

OUTCOME 4

Prepare and present digital audio to a specified brief.

Performance Criteria

- (a) Modify acquired digital audio using appropriate software to satisfy the requirements of the specified brief.
- (b) Play digital audio in the format required by the specified brief.
- (c) Complete the acquisition and playback of the digital audio within the timescale of the brief.

EVIDENCE REQUIREMENTS FOR THIS UNIT

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

A candidate is encouraged to use the Internet in any research, etc, however, the evidence produced must be in the candidate's own words.

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

A candidate is required to provide written and/or oral recorded evidence for Outcome 1. The evidence for this Outcome must be obtained under controlled, supervised conditions. The assessment will be closed-book 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:

- ◆ **One** purpose of analogue-to-digital and digital-to-analogue conversion
- ◆ **One** impact of sampling rates on quality of audio capture
- ◆ The main purposes of **two** different digital audio file formats
- ◆ The main purposes of **two** different file compression standards
- ◆ The characteristics of **two** audio connectors
- ◆ The characteristics of **one** audio convertor

For Outcomes 2, 3 and 4 a candidate is required to provide:

National Unit Specification: statement of standards (cont)

UNIT Digital Media: Audio Acquisition (SCQF level 4)

- ◆ Written and/or recorded evidence which consists of:
 - possible types, quantity and expected quality of digital audio required for the brief, possible sources for acquiring digital audio, hardware requirements, copyright and any data protection implications for each digital audio sample.
 - a schedule of activities for acquisition of digital audio including a breakdown of the timescales required. The schedule must include any health and safety issues which apply to the acquisition or storage of the planned digital audio.
 - a log of activities undertaken detailing the setting up and use of the recording equipment and outlining the recording process including the use of any optimisation techniques to improve recording quality. Candidates must acquire and store at least ten digital audio samples as required by the brief and the plan of activities. At least six of these must be from an analogue source. At least two must be from a digital source. The log must also include the filenames and storage locations used as well as the timescales taken to acquire and store the digital audio samples.

- ◆ Product evidence which consists of a portfolio of at least:
 - ten digital audio samples which have been acquired and stored as required by the brief and the plan of activities.
 - six modified digital audio samples presented in a manner specified within the brief.

The evidence produced for Outcomes 2, 3 and 4 can be produced over an extended period of time under unsupervised conditions but the assessor must authenticate that the evidence produced is the candidate's own work. The assessor must also ensure that candidates adopt safe working practices throughout the undertaking of this Unit.

An assessor observation checklist is required which authenticates that candidates have completed the above tasks. An assessor must endorse each candidate checklist with their name, signature and date.

The candidate's log should be endorsed by the candidate and the assessor with each of their names, signatures and the relevant date(s).

The Assessment Support Pack (ASP) for this Unit provides sample assessment material including an instrument of assessment for the knowledge, a specified brief and exemplar folio. Centres wishing to develop their own assessments should refer to Assessment Support Pack to ensure a comparable standard.

National Unit Specification: support notes

UNIT Digital Media: Audio Acquisition (SCQF level 4)

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 overall aim of this Unit is to provide candidates with the knowledge and skills to be able to successfully capture audio from a variety of sources into a digital format on a computer based system.

The candidate should be made aware of the physical nature of sound and how analogue sound is stored and played back, eg vinyl record player. They should be shown how the analogue-to-digital conversion takes place and concepts such as sampling rates for audio should be introduced here. They should know how the resulting digital files are stored. The digital-to-analogue conversion process should be explained.

The file formats for storage of digital audio, should cover those prevalent at the time, eg wav, mp3, m4a, and wma. The need for compression should be demonstrated and basic principles of compression types covered (lossy, lossless) along with codecs in common use. Candidates should be aware of the common sampling rates used for music and voice recording and be able to demonstrate the effect sampling rate has on both quality and the resultant file size.

Candidates should be made conversant with the commonly used audio connectors, audio input/output types and phono equalisation (Recording Industry of America — RIAA). The content should cover the process of audio file conversion between file types and also of conversion of phono input from a turntable which requires the use of a RIAA equaliser. Conversion of vinyl records from a turntable to a digital audio format is common form of audio capture. Use should be made of audio file format converters to change, eg wav to mp3, turntable phono output to wav (or to mp3 if equipment allows). A turntable and a RIAA phono to line converter will be required for these tasks.

The brief should provide opportunities for the candidate to demonstrate the required set of competences in setting up equipment to provide recording and playback. The source device (to be recorded) could be a turntable, a CD player or a live performance. Regardless of the source the recording and computer equipment should be successfully connected, set-up and adjusted to optimise the audio capture and recording quality.

The candidate should be made aware of and demonstrate health and safety practices when capturing sound. Digital audio files should be named and stored so that recordings can be retrieved easily and effectively. The requirements of copyright legislation should be known and adhered to by the candidate.

National Unit Specification: support notes (cont)

UNIT Digital Media: Audio Acquisition (SCQF level 4)

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Outcome 1 relates to the background knowledge the candidate requires to be able to undertake this Unit, and is essentially the basic concepts behind what is meant by digital audio. The candidate should be made aware of how analogue and digital sounds are stored and how the analogue-to-digital and digital-to-analogue conversion process is carried out. Concepts such as sampling rates for audio should be introduced here. The candidate should be aware of the common sampling rates used and be able to demonstrate the effect sampling rate has on the resultant file size.

The candidate should know the methods for the storage of digital audio, including file types such as wav, mp3, m4a, and wma. The candidate should appreciate the requirement for file compression standards, how these compression techniques operate and related compressed file formats.

Outcome 2 is to ensure that the candidate is conversant with the commonly used audio connectors, audio input/output types and phono equalisation (RIAA). The candidate should experience practical activities that involve the use of commonly used audio connectors, identification of their characteristics and their purpose.

This should include the candidate performing audio file conversion between file types and also converting phono input from a turntable which requires the use of a RIAA equaliser. The candidate should engage in practical activities that also require the use of the audio file format converters to change the currently used file format, eg wav to mp3, turntable phono output to wav (or mp3 if equipment allows). The candidate should have the opportunity to use a turntable and a RIAA phono to line converter as this is a common form of audio capture.

Outcome 3 allows the candidate to perform audio capture to a given brief. The candidate should be given a brief to work to and should work on their own unaided. The candidate should set-up the equipment to be used for playback and recording. The source device (to be recorded) could be a turntable, a CD player or a live performance. Regardless of the source the recording and computer equipment should be successfully connected by the candidate, and set-up and adjusted to optimise the audio capture and recording quality.

The candidate should be aware of and demonstrate health and safety practices when capturing sound. Guidelines should be given on the effective naming and labelling of completed recordings/audio captures so that file storage and retrieval is simplified. The importance of copyright should be stressed and the candidate should know the permissions granted to work produced as part of an educational assessment. It is strongly recommended that candidates are required to playback the presentation to ensure that it is fully functional and error free.

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

Outcome 1	10 hours
Outcome 2	10 hours
Outcome 3	15 hours
Outcome 4	5 hours

National Unit Specification: support notes (cont)

UNIT Digital Media: Audio Acquisition (SCQF level 4)

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

In this Unit candidates are required to interpret a given brief for sound capture. This may provide opportunity for developing aspects of the Core Skill in Problem Solving as well as aspects of the Core Skills in Communication.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

It may be appropriate for some of the evidence for this Unit to be produced using e-assessment provided the national standard is applied and the conditions of assessment are consistent for all candidates. This may take the form of e-testing (for knowledge and understanding) and/or e-portfolios (for practical abilities).

A suitable assessment for Outcome 1 would be an objective test which provides an opportunity 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.

Outcomes 2, 3, and 4 should be assessed by the production of the evidence materials which meets the requirements of a specified brief. The brief should ensure that the candidates are aware of the quantity of work required, the quality of the digital audio to be acquired and the timescale etc for production. Acquiring spoken audio, for example, will require different approaches from acquiring music.

Centres should provide a log which can include headings for candidates to follow.

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 Assessment Support Pack (ASP) for this Unit provides sample assessment material including an instrument of assessment for the knowledge, and a sample candidate log and an assessor checklist. Centres wishing to develop their own assessments should refer to Assessment Support Pack to ensure a comparable standard.

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).