



Higher National Unit specification: general information

Unit title: Sound and Vision for Interactivity

Unit code: H31B 35

Superclass: KG

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Unit purpose

This Unit is designed for candidates who want to work with audio and video in an Interactive Media role. Candidates should gain practical skills in digitisation, digital processing and digital encoding with a focus on mobile technologies. Candidates will also be introduced to the different types of mobile applications that audio and video sequences can be viewed on and the methods of transmission used to send audio video sequences to mobile applications.

On completion of the Unit the candidate should be able to:

- 1 Describe and compare file formats and their associated digital encoding formats for audio and visual content.
- 2 Investigate current technologies used for the deployment of mobile audio and video.
- 3 Capture edit and optimise simple audio and video content for a mobile platform.

Recommended prior knowledge and skills

Access to this Unit is at the discretion of the Centre. However, it is recommended that candidates should have a basic knowledge of audio video file formats and audio video capture and familiarity with computer software. This may be evidenced in the by the possession of relevant HN Units such as F20D 34 *Digital Media: Video* and F20C 34 *Digital Media: Audio*.

Credit points and level

1 Higher National Unit credit at SCQF level 8: (8 SCQF credit points at SCQF level 8*)

**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.*

General information (cont)

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes of this Unit specification.

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.

Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Describe and compare file formats and their associated digital encoding formats for audio and visual content.

Knowledge and/or Skills

- ◆ Video file formats
- ◆ Video encoding formats
- ◆ Video encoding techniques
- ◆ Video encoding artefacts
- ◆ Audio file formats
- ◆ Audio encoding formats
- ◆ Audio encoding techniques
- ◆ Audio encoding artefacts

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ describe and compare video file formats for three delivery platforms, including at least one mobile platform. For each video file format:
 - make reference to the compression method used, compression ratios and quality
 - describe the encoding technique(s) used by each codec
 - identify artefacts that can be introduced as a result of using the named video codecs.
- ◆ describe and compare audio file formats for three delivery platforms, including at least one mobile platform. For each audio file format:
 - make reference to the compression method used, compression ratios and quality
 - describe the encoding technique(s) used by each codec
 - identify artefacts that can be introduced as a result of using the named audio codecs.

Higher National Unit specification: statement of standards (cont)

Unit title: Sound and Vision for Interactivity

Outcome 2

Investigate current technologies used for the deployment of mobile audio and video.

Knowledge and/or Skills

- ◆ Mobile applications
- ◆ Media transmission
- ◆ Mobile devices

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ investigate common mobile audio video applications giving examples of their use:
 - live television, on-demand media, interactive video, and video mail.
- ◆ describe common audio video transmission technologies used by mobile applications:
 - streaming media, download and play/pod casting.

Outcome 3

Capture edit and optimise simple audio and video content for a mobile platform.

Knowledge and/or Skills

- ◆ Audio video capture
- ◆ Audio video editing
- ◆ Optimising media content

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ plan for the capture of an audio video sequence:
 - a description of the proposed audio and video content and justification of how it meets the brief.
- ◆ capture an audio video sequence:
 - capture an audio video sequence of no less than 30 seconds
 - edit an audio video sequence into a coherent sequence
- ◆ encode and optimise audio video content for delivery on a mobile platform specified by a brief.
- ◆ evaluate the encoding and optimisation process used referencing:
 - file size and data transfer rates and playback quality.

Higher National Unit specification: support notes

Unit title: Sound and Vision for Interactivity

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 Unit has been devised at SCQF level 8 and has been developed as part of HND Interactive Media award.

Outcome 1 — This Outcome has been designed to give Candidates knowledge and understanding of audio and video file formats, compression techniques associated with these formats and the artefacts resulting as a result of the encoding process. Candidates should understand the compression schemes employed by each codec. Candidates should understand which encoding format is best to use for a particular platform, including mobile platforms.

Common video file formats at the time of writing include Flash (FLV/SW), QuickTime (MOV), MPEG (MPG, MP4), OGG, WebM and WMV.

Candidates should be made aware of the factors that contribute to video file size such as physical dimensions (resolution) and frame rate. Candidates should understand lossy/lossless, temporal and spatial compression techniques and should explore and demonstrate understanding of codecs that employ these techniques.

Common audio file formats at the time of writing include MP3, AAC, OGG, OPUS and AIFF.

Candidates should also explore audio file formats and compression schemes showing understanding of temporal masking and frequency masking, lossy/lossless techniques and an understanding of codecs that employ these techniques.

Outcome 2 — This Outcome requires the candidate to develop an understanding of various mobile media applications such as interactive video, media on-demand, video mail, live television. Candidates should be encouraged to explore these applications and observe their use on mobile devices such as PDAs (Personal Digital Assistant), PMPs (Portable Media Players), Laptop computers and mobile telephones. In addition, candidates should understand the different technologies used to deploy media to mobile devices including, but not limited to streaming, download and play, mobile casting, multiplexing, media synchronisation and media attachments.

Outcome 3 — This Outcome has been designed to give candidates Knowledge and/or Skills in planning an audio video solution and capturing a simple audio video sequence to optimise for mobile delivery.

Candidates will be expected to draw on their investigations from previous Outcomes to encode and optimise their media solution into a form suitable for mobile delivery.

Higher National Unit specification: support notes (cont)

Unit title: Sound and Vision for Interactivity

Guidance on the delivery of this Unit

The purpose of this Unit is to develop candidates understanding of audio and video encoding formats and techniques for delivery on different platforms with emphasis on mobile platforms and their associated deployment technologies. Candidates will gain knowledge and understanding of commonly utilised mobile applications and the limitations of sending mobile media to these. Candidates will also investigate different forms of transmitting media to the common mobile applications to further develop their understanding of deploying mobile media. These investigations will prepare candidates for encoding their own audio and video files.

Candidates will need a Multimedia Enabled computer system with access to the Internet and Audio Video software.

The holistic approach will integrate assessments for all Outcomes. This will take the form of a brief that should be carried out over an extended period.

Candidates may produce evidence electronically and upload this to blog. An assessor checklist should be provided for product based evidence.

In Outcome 1 candidates should research file and encoding formats that may satisfy the requirements of this brief. This Outcome should be taught first and should be issued early on in the delivery.

In Outcome 2 candidates are required to report on current mobile applications and the transmission options available to these.

In Outcome 3 the candidates will capture a simple audio video sequence that will comply with the requirements of the brief. Candidates will then optimise their audio video content suitable for mobile distribution.

Guidance on the assessment of this Unit

Candidates are encouraged to make use of the Internet for research; 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 Evidence Requirements of each Outcome to show that the candidate has appropriate knowledge, skills and understanding of the content of this Unit.

Outcomes 1, 2 and 3 could be assessed holistically using a brief or real life scenario where candidates would be asked to produce an audio video sequence for broadcast to a mobile application. Outcome 1 should therefore provide students with background research for preparing their audio video sequences for Outcome 3.

Higher National Unit specification: support notes (cont)

Unit title: Sound and Vision for Interactivity

Outcome 1 is an open-book assessment and should take the form of an investigative report, carried out under supervised conditions. It is designed to demonstrate candidates knowledge and understanding of codecs used to encode the underlying video, compression techniques employed by these codecs, artefacts associated with their use and their suitability for different delivery platforms including mobile.

Outcome 2 is an open-book assessment and should take the form of a practical assessment carried out under supervised conditions and is designed to demonstrate the candidate's understanding in mobile applications and transmission technologies.

Outcome 3 is an open-book assessment and should take the form of a practical assessment carried out under supervised conditions. It is designed to demonstrate the candidate's Knowledge and/or Skills in planning, capturing and editing a media solution and optimising media content for mobile distribution.

Assessment Guidelines

Outcome 1

Candidates will need to provide written and/or oral evidence to demonstrate their knowledge by showing that they can describe audio and video file formats and the various supported encoding techniques suitable for playback on different platforms.

It is recommended that centres provide Candidates with uncompressed audio and video files so they can practically investigating file formats, associated codecs and resulting output, to assist in producing the written evidence.

A candidate's response can be judged as satisfactory when the candidate can provide evidence to show that they can:

- ◆ describe Video file formats used to deliver video content on three different delivery platforms including at least one mobile platform
- ◆ compare the codecs used with each video file which are appropriate to the delivery platform, making reference to:
 - compression ratios
 - quality
- ◆ describe how each codec compresses the video information
- ◆ describe artefacts introduced as a result of the compression
- ◆ describe Audio file formats used to deliver audio content on three different delivery platforms including at least one mobile platform
- ◆ compare the codecs used with each audio file which are appropriate to the delivery platform, making reference to:
 - compression ratios
 - quality
- ◆ describe how each codec compresses the audio information
- ◆ describe artefacts introduced as a result of the compression

Higher National Unit specification: support notes (cont)

Unit title: Sound and Vision for Interactivity

Outcome 2

A candidate's response can be judged as satisfactory when the candidate can provide evidence to show that they can:

- ◆ produce an investigative report detailing:
 - Common mobile applications and for each giving an example of its current use
 - Describing media transmission technologies used to transmit audio video content to common mobile media applications

Outcome 3

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can capture an audio video sequence.

Candidates focus should be on capturing a simple audio video sequence.

A candidate's response can be judged as satisfactory when the candidate can provide evidence to show that they can:

- ◆ produce a requirements document describing the audio video solution and justification of how it meets the brief
- ◆ capture an audio video sequence of no less than 30 seconds
- ◆ edit audio and video into one synchronised file
- ◆ encode and optimise audio video content using appropriate techniques and settings
- ◆ evaluate file sizes, DTRs and playback quality

Online and Distance Learning

This Unit could be delivered by open learning provided suitable online materials were developed and candidates had access to media equipment. There would have to be a well defines brief which took into account any factors specific to open learning.

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance.

Opportunities for developing Core Skills

There are no opportunities to develop Core Skills in this Unit.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date

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General information for candidates

Unit title: Sound and Vision for Interactivity

This Unit is designed to give you knowledge and understanding of how audio and video is delivered to new mobile technologies. You will capture and edit audio and video into a coherent sequence that will then be optimised for delivery to a mobile application through a mobile transmission technology. You will optimise your sequence based on evaluations into different codecs that will compress your sequence into a suitable format for transmission to a mobile device.

Outcome 1 will enable you to evaluate common codecs used in compressing audio video sequences for different platforms including mobile platforms, the technologies used in the compression and the effects using these techniques have on the quality of the sequence.

You will evaluate these codecs through practical and investigative research to find a good solution for each platform specified in the brief. Outcome 1, along with Outcome 2 will provide you with the knowledge and skills you require to encode your audio video sequence in Outcome 3.

In Outcome 2 you will be required to investigate the different types of mobile applications that your audio video sequence could be viewed in. You will look at up-to-date technologies such as Media on Demand and Interactive video.

This will enable you to understand some of the limitations and restrictions of displaying media on mobile devices. In addition, you will also learn about the transmission technologies used to send media to these popular mobile device applications giving you a greater understanding of how your file sizes will affect deployment of your audio video files.

In Outcome 3 you will capture and edit coherently and audio video sequence. You are generally not being assessed on your video capture and editing skills but on your ability to take and audio video sequence and encode this to a good standard of quality so that it may be delivered to a mobile device.

You will use the knowledge and skills learned in the previous Outcomes to produce a mobile solution for your audio video sequence and you will evaluate the results of this solution.