

Higher National Unit specification

General information for centres

Unit title: Audio Visual: Introduction to Audio Visual Technology

Unit code: F1TK 34

Unit purpose: This Unit is designed to introduce the candidate to the basic principles of AV technology systems at an introductory level.

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

- 1 Explain the principles of audio, video, and storage technology.
- 2 Explain the principles of broadcasting.
- 3 Research and explain audio visual systems for presentations.

Credit points and level: 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**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.*

Recommended prior knowledge and skills: While access to this Unit is at the discretion of the centre, it would be beneficial if candidates had prior experience of using a computer system at SCQF level 5. Examples would be: D1D0 11 *Multimedia Computing: Introduction to Video Production*, D6RC 11 *Introduction to Computer Animation* or DO1D 11 *Information Technology*.

Core Skills: There are opportunities to develop the Core Skills of Information Technology and Communication, Problem Solving at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

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. The Unit could be taught contiguously with DH4D 34 *Audio Visual Presentation 1: Introducing Audio Visual Presentation*.

Assessment: Outcomes 1, 2 and 3 may be assessed holistically by a project or report of 1500 words or equivalent. Alternatively, individual reports could be used to assess Outcomes 1 and 3, with Outcome 2 being assessed by the use of restricted response questions.

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

Explain the principles of audio, video, and disc storage recording technology

Knowledge and/or Skills

- ◆ Analogue signals
- ◆ Digital signals
- ◆ Transmission of digital stereo sound
- ◆ Operation of a camcorder
- ◆ Mass storage device
- ◆ Redundant Array of Inexpensive/Independent Disks (RAID)
- ◆ Current development in storage recording technology

Evidence Requirements

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

- ◆ explain analogue and digital audio signals, and describe how digital signals are created and processed
- ◆ explain video signal elements, including - line sync pulses, field sync pulses, colour burst, interlaced and non interlaced scanning, fly back, black level and peak white level
- ◆ explain how a camcorder works. The description must include an explanation of the functions of the Charge-Couple Device(CCD) and lens
- ◆ explain the technical specification and operation of an MSD
- ◆ explain three characteristics of a Redundant Array of Inexpensive/Independent Disks
- ◆ investigate one current development in storage technology

Assessment Guidelines

Outcome 1 may be assessed with Outcomes 2 and 3. However, Outcome 1 could be assessed on its own as a separate assessment event in report by the candidate of 500 words or equivalent.

Higher National Unit specification: statement of standards (cont)

Unit title: Audio Visual: Introduction to Audio Visual Technology

Outcome 2

Explain the principles of broadcasting

Knowledge and/or Skills

- ◆ Operation of pixels
- ◆ Construction of pixels
- ◆ High Definition Television (HDTV)
- ◆ Internet Protocol Television (IPTV)
- ◆ Video on Demand (VOD)
- ◆ Multicasting
- ◆ Network Personal Video Recording (NPVR)

Evidence Requirements

Evidence for this Outcome will be generated by sampling. Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ explain how pixels operate in the creation of images
- ◆ explain HDTV standards as applicable at time of assessment.
- ◆ explain the computer data display signal in a visual display

Candidates will be assessed on a sample of two from the last four Knowledge and/or Skills items listed above.

- ◆ explain two of the following — IPTV channels, multicasting, VOD or NPVR

Assessment for this Outcome will take place under controlled conditions. A different sample should be chosen for a reassessment event.

Assessment Guidelines

Outcome 2 may be assessed with Outcomes 1 and 3. However, Outcome 2 could be assessed as a separate event using a series of restricted response questions. This assessment could be assessed using open-book under supervised conditions.

Higher National Unit specification: statement of standards (cont)

Unit title: Audio Visual: Introduction to Audio Visual Technology

Outcome 3

Research and explain audio visual systems for presentations

Knowledge and/or Skills

- ◆ Portable AV presentation equipment

Evidence Requirements

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

- ◆ Research and explain the technical specification for:
 - A laptop computer running state of the art presentation software
 - Computer graphics and video LCD Projector
 - PA system
 - Digital Camcorder
 - Plasma display monitor
 - A video conferencing system
 - Redhead lighting kit

Assessment Guidelines

The assessment event for Outcomes 1, 2, and 3, may take the form of an integrated project brief requiring the candidate to produce a report of 1,500 words or equivalent, using diagrams or images as appropriate to explain the technology. Reports may be styled according to suitable word processing templates. Case studies may be used for guidance in producing the final report, and may be sourced from web derived sources with correct attribution of sources as appropriate.

Outcome 3 may be assessed as a separate assessment event in a 500 word report from a candidate's research undertaken on audio visual systems for presentations within the audio visual sector of the creative industries.

Administrative Information

Unit code: Audio Visual: Introduction to Audio Visual Technology

Unit title: F1TK 34

Superclass category: KG

Original date of publication: July 2007

Version: 01

History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Audio Visual: Introduction to Audio Visual Technology

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 purpose of this Unit is to provide the candidates with an introductory overview to this subject area, which will allow the candidate to study specialised Units within the area. Computer competencies should be integrated into the creative process, and lecturers should be encouraged to update the resource database as the software and hardware evolves in this dynamic subject area.

Outcome 1

This Outcome encourages the candidate to develop a broad understanding of audio and video signals, how they apply in practice, and how the data is stored. A popular MSD is the computer hard disk, and candidates should show awareness of current developments in this area, and be familiar with the concept of RAID systems. RAID refers to Redundant Array of Inexpensive/Independent Disks, a category of disk drives where two or more hard disk drives are used to ensure that data is safely stored. There are different levels of RAID; however, RAID 5 is the most popular.

Outcome 2

This Outcome encourages the candidate to develop an awareness of basic principles of broadcasting as currently used, with the candidate being able to describe the analogue and digital signal process, how a broadcast image is displayed, and the role of pixels in image acquisition. Candidates should be able to demonstrate knowledge of HDTV and internet protocol television over a network infrastructure. The concept of broadcasting is not to be interpreted exclusively in the context of terrestrial broadcasting. The abbreviation IPTV commonly refers to Internet Protocol Television, where a digital television service is provided using the internet protocol over a network infrastructure. IPTV covers both multicasting (live TV) and VOD, Video on Demand. VOD uses an mpeg2 or 4 codec sent via an mpeg2 transport stream via IP Unicast. Other codecs will become prominent during the life of this Unit, and should be incorporated accordingly. NVPR is Network Personal Video Recording, a type of time shifted broadcast recording off a server.

Outcome 3

This Outcome encourages the candidate to research and describe the technical specifications underpinning a range of AV equipment commonly used in sectors of the AV industry, and describe their practical application, including lighting the set with portable lighting. This Outcome encourages the candidate to explore a range of ideas and possibilities in relation to audio visual display systems and their interaction with each other in responding to a client brief.

Guidance on the delivery and assessment of this Unit

Outcomes 1, 2 and 3 may be assessed holistically by a project or report of 1,500 words or equivalent. Alternatively, individual reports could be used to assess Outcomes 1 and 3, with Outcome 2 being assessed by the use of restricted response questions.

Higher National Unit specification: support notes (cont)

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Opportunities for developing Core Skills

There are opportunities to develop the Core Skill of communication at SCQF level 6 if the candidate submits a report for all of the Outcomes. There may be opportunities to develop the Core Skill of problem solving at SCQF level 6 when the candidate applies knowledge in researching and deriving technical specifications in response to the project brief. There are opportunities to develop the Core Skill of Information Technology at SCQF level 6 if the candidate uses the Internet in their research and uses software packages in the evaluation and collation of complex information in the form of relevant research and technical materials.

Open learning

This Unit could be delivered by open learning provided the candidate had access to the appropriate hardware and software required by the Outcomes. Arrangements would have to be made with the delivering centre for the candidate to be supervised for the Outcome 2 assessment.

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).

General information for candidates

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This Unit introduces you to the broad basic principles of audio visual technology. By the end of the Unit you should be able to:

- 1 Explain the principles of audio, video, and storage technology.
- 2 Explain the principles of broadcasting.
- 3 Research and explain audio visual systems for presentations.

Outcome 1 introduces you to an understanding of Analogue and digital signals, their advantages and disadvantages. You will discover what comprises a video signal, the transmission of digital stereo sound, how a camcorder operates, and various storage media such as computer hard disks. You will become familiar with the concept of RAID systems. RAID refers to Redundant Array of Inexpensive/Independent Disks, a category of disk drives where two or more hard disk drives are used to ensure that data is safely stored.

Outcome 2 will enable you to have an understanding of how pixels operate in the creation of images. How HDTV works as compared to non HDTV will be examined, and why HDTV has become increasingly prominent. Visual display units permeate many aspects of modern audio visual, so we will look at how computer data is displayed visually. As broadcasting systems expand, we will look at internet protocol television, and its related developments such as server based time shifting for consumer television.

Outcome 3 will help you to become familiar with a range of hardware and software involved in audio visual production, and you will research a technical specification for the appropriate hardware, which may include laptop computers running presentation software, PS systems, LCD projectors, camcorders, video conferencing system, and the ubiquitous redhead luminaire.

The knowledge and skills you acquire in this Unit should help you understand the learning involved in subsequent Units of a more specialised nature that will deepen your understanding of audio visual technologies.