



Higher National Unit Specification

General information

Unit title: Sound Production: Digital Audio Workstations
(SCQF level 7)

Unit code: J019 34

Superclass: XL

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Unit purpose

This unit is designed to give learners an understanding of recording and manipulating audio and MIDI signals for sound production using digital audio workstations. It is designed to give learners the underpinning knowledge and skills required to use the main functions of a digital audio workstation and to take a sound production project to a conclusion by creating an edited pre-production master incorporating critical listening.

This unit is intended for learners who wish to develop the skills and knowledge required to effectively use a digital audio workstation to record, edit and mix sound production projects.

Outcomes

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

- 1 Configure a digital audio workstation to a given brief.
- 2 Perform MIDI and audio recording and editing.
- 3 Perform a mix-down of a multi-track session with audio processing.
- 4 Create an edited pre-production master to a given brief.

Credit points and level

2 Higher National Unit credits at SCQF level 7: (16 SCQF credit points at SCQF level 7)

Higher National Unit Specification: General information (cont)

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Recommended entry to the unit

Entry is at the discretion of the centre, however, learners should have a basic knowledge of audio production software and an understanding of the role of digital technology for audio and music production.

Core Skills

Achievement of this unit gives automatic certification of the following Core Skills component:

Complete Core Skill	None
Core Skill component	Critical Thinking and the at SCQF level 5 Planning and Organising at SCQF level 5

There are also opportunities to develop aspects of Core Skills which are highlighted in the support notes of this unit specification.

Context for delivery

This is a mandatory unit in the framework for HNC/HND Sound Production and an optional unit in the HNC/HND Music framework. It is recommended that it should be taught and assessed within the subject area of the group award to which it contributes.

The Assessment Support Pack (ASP) for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

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.

Higher 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 SQA.

Outcome 1

Configure a digital audio workstation to a given brief.

Knowledge and/or skills

- ◆ Digital audio workstation components
- ◆ Connectivity protocols
- ◆ MIDI peripheral connections
- ◆ Audio peripheral connections
- ◆ Session parameters configuration
- ◆ Equalisation

Outcome 2

Perform MIDI and audio recording and editing.

Knowledge and/or skills

- ◆ Draw MIDI notes
- ◆ Record MIDI notes
- ◆ Quantise MIDI notes
- ◆ Assigning MIDI controller data
- ◆ Editing MIDI note parameters
- ◆ Recording audio
- ◆ Editing audio
- ◆ Labelling tracks appropriately

Outcome 3

Perform a mix-down of a multi-track session with audio processing.

Knowledge and/or skills

- ◆ Equalisation
- ◆ Dynamic processing
- ◆ Time-domain processing
- ◆ Audio channel level balancing
- ◆ Audio channel panning placement
- ◆ Appropriate and effective use of mix groups
- ◆ Writing and editing automation
- ◆ Project file handling

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Outcome 4

Create an edited pre-production master to a given brief.

Knowledge and/or skills

- ◆ Project file management
- ◆ Audio waveform editing
- ◆ Audio equalisation and dynamics control
- ◆ Critical listening
- ◆ Format production

Evidence requirements for this unit

Outcome 1

Learners will need to provide performance evidence supported by an assessor observation checklist to demonstrate their knowledge and/or skills by showing that they can:

- ◆ correctly connect DAW components.
- ◆ correctly set up external connections to facilitate the recording and use of MIDI data.
- ◆ correctly set up external connections to facilitate the recording and playback of audio signals.
- ◆ configure session parameters to facilitate the recording and playback of MIDI and Audio data.

Each learner will need evidence to show that they can, in relation to a given brief, correctly set up a digital audio workstation to facilitate the integration of MIDI and audio recording and playback.

Outcome 2

Learners will need to provide product evidence supported by an assessor observation checklist to demonstrate their knowledge and/or skills by showing that they can:

- ◆ perform the drawing of MIDI notes appropriately.
- ◆ perform the recording of MIDI notes appropriately.
- ◆ perform the quantising of MIDI notes appropriately.
- ◆ perform the assigning of MIDI controller data appropriately.
- ◆ perform MIDI note parameter editing appropriately.
- ◆ perform audio recording appropriately.
- ◆ perform audio editing appropriately.
- ◆ perform appropriate track labelling.

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Each learner will need evidence to show that they can correctly perform all of the above. At least two MIDI tracks must be recorded in real time and at least two MIDI tracks drawn within the audio production software. At least three discrete audio tracks must be recorded in real time which are free from distortion and with a good signal to noise ratio. In addition, the learner will need to provide evidence of editing at least two MIDI note parameters as well as showing the ability of assigning MIDI control data to an external MIDI controller. Evidence for this outcome should take the form of an assessor observation checklist, together with a copy of the learner's project files.

Outcome 3

Learners will need to provide product evidence supported by an assessor observation checklist to demonstrate their knowledge and/or skills by showing that they can:

- ◆ perform equalisation appropriately
- ◆ perform dynamic processing appropriately.
- ◆ perform time-domain processing appropriately.
- ◆ perform audio channel level balancing appropriately.
- ◆ perform audio channel panning placement appropriately.
- ◆ perform appropriate and effective use of mix groups.
- ◆ perform pan, level and mute automation appropriately.
- ◆ perform project file handling appropriately.
- ◆ perform equalisation appropriately.

Each learner will need evidence to show that they can perform a mix-down of a multi-track session with audio processing. At least two instances of equalisation, two instances of dynamic processing and two instances of time-domain processing should be incorporated.

Evidence for this outcome should take the form of an assessor observation checklist, together with a copy of the learner's project files.

Outcome 4

Learners will need to provide product evidence supported by an assessor observation checklist to demonstrate their knowledge and/or skills by showing that they can:

- ◆ name, locate, use and save project data files correctly and efficiently.
- ◆ perform appropriate fades.
- ◆ perform audio equalisation and dynamic control effectively.
- ◆ use critical listening skills to ensure pre-production master is optimal in terms of the audio signal quality.
- ◆ create a completed pre-production master in response to a brief.

Each learner will need evidence to show that they can, in relation to a given brief, perform the necessary steps to create an edited pre-production master. Evidence for this outcome should take the form of an assessor observation checklist together with the submission of the learner's edited pre-production master.

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Outcomes may be assessed individually, however the learner would benefit from holistic assessment of all outcomes by working on a project that provides an opportunity for all evidence requirements to be met.

For Outcome 1, evidence should take the form of performance evidence and an assessor observation checklist.

For Outcomes 2, 3 and 4, evidence should take the form of product and performance evidence along with an assessor observation checklist.

Assessment should be carried out in open-book, supervised conditions.



Higher National Unit Support Notes

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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 80 hours.

Guidance on the content and context for this unit

This unit is primarily intended to improve learners' understanding of configuring and operating digital audio workstations. It is applicable to those who have a basic knowledge of audio production software.

Learners may work with supplied MIDI and/or audio project material or create original content. Learners will use this material to take an integrated MIDI and audio project to a conclusion.

Outcome 1 — learners will configure the software and hardware parameters that are required for an integrated audio and MIDI project. Learners will also configure software session parameters to allow the integration of audio and MIDI data. For information on audio configuration the learners could be shown project file format, latency control, input gain control and channel allocation. For information on DAW components, the learner should be able to identify and connect: a computer with appropriate DAW software, Audio Interface, MIDI Interface (standalone or integrated in controller keyboard), MIDI Controller Keyboard, Audio monitoring (speakers and/or headphones) and external storage drive. Although not assessed, it would be useful for candidates to be introduced to computer components such as Processors, Chipsets, Hard drives, Random Access Memory, graphics cards and operating systems. This would allow the candidate to develop an appreciation of how these computer components can affect the performance of a DAW system.

Outcome 2 — learners will perform MIDI and audio recording and editing. Learners should be made aware of both recording and drawing of MIDI note data and performing basic MIDI note quantisation. Learners must demonstrate an ability and understanding of assigning MIDI control data to an external controller, ie modulation wheel, rotary knobs or sliders. Learners are also required to edit MIDI note parameters which could include velocity, modulation, or pitch bend. Learners are required to record and edit audio tracks which are free from distortion and have a good signal to noise ratio. An example of audio editing could include the removal of unwanted noise or gaps from a recording. Other examples could include changing the length of a sound to fit a specific gap or to employ the same section of audio more than once within a project. Data file handling relating to appropriate track naming, location and storing project files correctly and efficiently should be covered.

Higher National Unit Support Notes (cont)

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Outcome 3 — considers the application and function of audio processing within a digital audio workstation. It is beyond the scope of the unit for the learner to be taught and to understand the complexities of the art and science of mixing and mastering. The learner is required to show that they can apply the basic processing and mixing functions available in a digital audio workstation environment. Pan, balance, equalisation, effects, mix groups and master output level controls should be covered. Data file handling relating to location, utilisation and storing project files correctly and efficiently should be covered.

Outcome 4 — should cover basic audio waveform editing relating to edit points where topping and tailing and fades may be performed. The learners should understand the application of overall equalisation and compression to enhance the final pre-production master. Creation of a completed pre-production master to an industry standard distribution format would cover final format production. Data file handling relating to naming, location, utilisation and storage of all project files correctly and efficiently should be covered.

This unit offers the potential for aspects of the following National Occupational Standards to be demonstrated:

CCSMT1	Follow Health and Safety practices in music and sound industries
CCSMT8	Use essential analogue and digital sound recording skills
CCSMT9	Use essential analogue and digital sound editing techniques
CCSMT12	Create a sample and audio file library — archive digital content
CCSMT10	Develop key MIDI and DAW audio techniques
CCSMT7	Use basic functions of MIDI sequencing on professional DAWs

Guidance on approaches to delivery of this unit

It is envisaged that this unit will be delivered in a classroom/lab setting using a learner centred, participative and practical approach. Sufficient time should be allowed for learners to become competent in the set-up of a basic digital audio workstation and the use of external MIDI controllers before assessment is undertaken. Through practical assignments and demonstrations, learners would develop the necessary knowledge and skills to configure session parameters to facilitate the recording and playback of MIDI and audio data within a digital audio workstation.

Learners would benefit from classroom/lab demonstrations in recording and editing MIDI and audio data to allow them to develop the skills required to achieve outcome two. While learners are undertaking practice sessions, they should be encouraged to develop the appropriate critical listening skills which are essential to effectively use a digital audio workstation. Learners should be encouraged to reflect and build on these skills at every opportunity.

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Prior to the assessment of mix-down and the creation of a completed pre-production master, learners would benefit from formative exercises, practicing their mixing skills on a variety of recordings and again, being encouraged to reflect and improve their skills through appropriate feedback from centre staff and by comparing their work to commercial recordings.

There is a wealth of written and online material available that explains and demonstrates recording and mixing techniques within a digital audio workstation environment and learners and centres should make extensive use of such resources to support delivery of this unit.

Learners would also benefit from lectures, practical demonstrations and talks given by industry professionals on the use and advances of using digital audio workstations.

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.

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

It is possible to assess the outcome knowledge and/or skills separately. This could be conducted at a single assessment event carried out in open-book, supervised conditions using an observation checklist to record achievement. However, it is recommended that a holistic approach is used to produce a completed project.

Learners should be given a written brief which outlines the requirements for each outcome.

For Outcome 1, learners should be provided with a written brief from which they will then connect and test the components of the DAW system and verify correct operation. Learners should be observed connecting and testing the system and should configure the relevant parameters to allow the effective integration of audio and MIDI within the DAW. Learners should configure project file format, latency control, input gain control and audio/MIDI channel allocation. An observation checklist should be retained as evidence.

For Outcome 2, it is suggested that learners submit session project files. The performing of all MIDI and audio recording and editing should be evident from these session files. Where the learner has assigned MIDI control data to an external controller, details and settings of this should be documented within the session project files.

For Outcome 3, it is suggested that learners submit project files of a mix-down session. All MIDI tracks should be converted to appropriate audio tracks and the session must include at least one mix group and a master output. Appropriate use of equalisation, time and dynamic processing should be evident as well as the use of pan, level and mute automation.

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For Outcome 4 it is suggested that learners submit a project session file of a pre-production master. The session file should include evidence of basic audio waveform editing and overall equalisation and dynamic control to enhance the final pre-production master.

Performance evidence for all outcomes should be observed and recorded on an assessor checklist.

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.

Opportunities for developing Core and other essential skills

This unit provides the opportunity to develop the following aspects of Core and other essential skills.

Problem Solving: the learner will employ critical thinking when selecting the appropriate tools and processes for correcting, enhancing and mixing MIDI and audio material.

Information and Communication Technology (ICT): the learner could have the opportunity to develop skills in accessing information through use of online tutorial resources during delivery of this unit.

Employability skills: the learner will have the opportunity to develop self-management, problem solving and application of IT elements of employability skills

This unit has the Critical Thinking and the Planning and Organising components of *Problem Solving* embedded in it. This means that when learners achieve the unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 5 and Planning and Organising at SCQF level 5.

History of changes to unit

Version	Description of change	Date

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General information for learners

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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 give you the ability to record and manipulate audio and MIDI information for use in sound production within a software environment. It is designed to give you the underpinning knowledge required to use the main functions of a digital audio workstation and to take a sound production project to a conclusion by creating a final pre-production master.

You will learn how to configure a digital audio workstation for recording and processing and how to connect external equipment to and from the workstation using MIDI and audio cabling and connections.

You will be assessed through your practical ability to use basic features of a digital audio workstation to record and edit, correctly and creatively enhance audio and MIDI material and your ability to create an edited pre-production master.

This unit will also give you the opportunity to develop your critical listening skills.

This unit has the Critical Thinking and the Planning and Organising components of *Problem Solving* embedded in it. This means that when you achieve the unit, your Core Skills profile will also be updated to show you have achieved Critical Thinking at SCQF level 5 and Planning and Organising at SCQF level 5.

There may be also opportunities in this unit for you to develop aspects of the core skill of Information and Communication Technology.