



National Unit Specification: general information

UNIT Sound: Synthesis and Sampling Skills (SCQF level 6)

CODE F58N 12

SUMMARY

This Unit is designed to introduce the candidate to the production of sounds using synthesisers and samplers. The Unit provides the opportunity for candidates to gain the basic skills required to program a range of synthesisers and samplers, either software or hardware based, to emulate the sound of different natural instruments and sounds, or to create entirely original sounds.

This Unit is an optional Unit within the National Certificate in Music (SCQF level 6) and the National Certificate in Sound Production (SCQF level 6), but can also be taken as a free-standing Unit.

This Unit is suitable for musicians and sound designers who may be looking to enhance their creative skills.

OUTCOMES

- 1 Program synthesisers with different sounds to a given brief.
- 2 Create original audio samples and use a sampler to playback original samples.
- 3 Creatively use sound synthesis and sampling techniques in response to a given brief.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

Administrative Information

Superclass: LH

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National Unit Specification: general information (cont)

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CREDIT VALUE

1 credit at Higher (6 SCQF credit points at SCQF level 6*).

**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

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

The Unit provides opportunities for candidates to develop aspects of the following Core Skills:

- ◆ Information Technology
- ◆ Problem Solving
- ◆ Working with Others

These opportunities are highlighted in the Support Notes of this Unit Specification.

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

Program synthesisers with different sounds to a given brief.

Performance Criteria

- (a) Program specified sounds on different synthesisers.
- (b) Apply sound generators and modifiers to shape the sounds.
- (c) Save the sound patches to an appropriate medium for recall purposes.

OUTCOME 2

Create original audio samples and use a sampler to playback original samples.

Performance Criteria

- (a) Produce original audio samples to use in a sampler.
- (b) Accurately edit audio samples for playback in a sampler.
- (c) Map samples to different keys within the same sampler.
- (d) Trigger playback of audio samples.
- (e) Save audio samples to an appropriate medium.

OUTCOME 3

Creatively use sound synthesis and sampling techniques in response to a given brief.

Performance Criteria

- (a) Creatively use sound synthesis techniques in response to a given brief.
- (b) Creatively use sampling techniques in response to a given brief.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Product evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria to the standard specified in the statement of standards. All Outcomes and Performance Criteria should be assessed under controlled conditions.

It is possible to take a holistic approach to this Unit, in that the evidence in Outcome 3 could incorporate all of the Performance Criteria assessed in Outcome 1 and 2. The 3 synthesised sounds and 4 samples could be specified in the brief for Outcome 3, along with their Performance Criteria, provided that a clear context for this brief is given.

OUTCOME 1

Each candidate is required to program three different sounds, each on a different type of synthesiser.

The assessor may choose to assess the candidate from a variety of synthesis types, which could include: FM synthesis, additive synthesis, granular synthesis, subtractive synthesis, physical modelling, wavetable synthesis and linear arithmetic synthesis. These may be hardware or software synthesisers or a mixture of the two. Each sound patch must be saved on a suitable secure medium (such as CD or paper).

All synthesisers must begin from an initialised patch setting and must fulfil the requirements of the brief. In the case of some analogue synthesisers, a tonally different initial setting should be used, to allow the candidate to apply synthesis skills as outlined in the Outcome.

Product evidence should show the candidate's ability to program sounds using a combination of parameters across the three synthesisers, which must include appropriate selection of oscillator(s), envelope generator(s), filter(s) and amplifier(s). Each sound patch must be able to be recalled.

The candidate is expected to demonstrate an understanding of ADSR (Attack, Decay, Sustain, Release) through use of time variant filters or time variant amplifiers (or the equivalent nomenclature) on one or all of the synthesisers.

OUTCOME 2

Each candidate is required to produce one program/file containing four originally recorded sounds from everyday objects or sources. These must be clear and undistorted at the point of recording.

The candidate is required to use the editing functions of the program or sampler to manipulate the sounds.

The candidate must be able to:

- ◆ trigger playback of each sample clearly and without distortion
- ◆ trigger playback of each sample with accurate editing points
- ◆ trigger playback of each sample
- ◆ map each sample to different keys, key groups or zones within the same sampler

National Unit Specification: statement of standards (cont)

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The program/file must be saved on a suitable medium and should allow accurate playback without any undue pauses.

OUTCOME 3

Each candidate is required to produce one recorded audio piece in response to a given brief. The audio piece must:

- ◆ last a minimum of 30 seconds
- ◆ demonstrate the creative use of at least one original synthesised sound and one sampler
- ◆ demonstrate accurate triggering of the sampler and synthesiser

The creative use of the synthesiser and sampler is assessed in the context of the brief. The technical skills of synthesis and sampling will have been assessed in Outcomes 1 and 2; the application of the skills will be assessed in Outcome 3.

Candidates may be assessed on a piece by piece basis, as they are ready, during delivery of the Unit; alternatively the candidate may submit all evidence at the end of the Outcome delivery period. The assessor should specify the timeframe for production of the sounds, which relate to the brief.

National Unit Specification: support notes

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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

This Unit is an optional Unit within the National Certificate in Music (SCQF level 6) and the National Certificate in Sound Production (SCQF level 6), but can also be taken as a free-standing Unit.

This Unit is suitable for candidates who wish to progress to more advanced courses in music technology and music, such as HND Sound Production and HND Music, or for anyone with an interest in musical composition and/or sound design.

This Unit has clear links with other Units that form part of the National Certificate in Sound Production (SCQF level 6), such as *Music: MIDI Sequencing* (SCQF level 5 or 6), *Sound: Design* (SCQF level 6), *Creative Project* (SCQF level 6) and *Digital Media: Audio Editing* (SCQF level 5). Although not essential, it is recommended that candidates may have had some experience prior to this Unit of MIDI sequencing and digital audio editing, or an integrative approach may be taken.

Candidates will learn skills in programming synthesisers and samplers. Musicians and sound designers require an understanding of sound waveforms and how to manipulate these within electronic or virtual instruments for creative contexts. Candidates will therefore have the opportunity to acquire skills that would lead to a variety of applications; for example, sound design projects, electronic music programming, performing with technology or audio installations.

It should be noted that the types of synthesiser and sampler referred to in the Outcomes can be software or hardware types. The Unit has been specifically written to allow a range of approaches to suit delivery centres.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

An awareness of assessment requirements and arrangements at an early stage in the delivery of the Unit will lend purpose to candidates' learning.

For Outcome 1, it is expected that teaching approaches will take into account some basic background concepts of the physics of sound, harmonic content and envelope, prior to embarking on programming skills.

Candidates should have plenty of opportunities to experiment with the (minimum) three different types of synthesiser. However, it is recommended that candidates may begin programming sounds by following sets of instructions on programming specified sounds, through which they will gradually begin to see the effect of each of the modifiers.

National Unit Specification: support notes (cont)

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In Outcome 2, a collaborative approach to creating samples is to be encouraged, although individual candidates will edit the sample files. Everyday objects such as stationery, human noises and sounds of nature may produce interesting results. Other instruments of assessment may involve sampling a hardware synthesiser patch or other instrument.

Outcome 3 is designed to be a creative response to a given brief, and candidates who now have all the technical skills necessary to respond to the brief should be able to work independently to a specified timeframe. There is again the possibility of candidates working collaboratively to assist with the creation of each other's recordings or performances, and this may be encouraged, provided that candidates create an individual response to the brief. If appropriate, this Outcome may form part of the *Creative Project* (SCQF level 6) Unit: for example, if the project takes the form of a radio programme, a 'jingle' may form part of this. In the case of a 'jingle' brief, teaching approaches may involve listening to different types of radio advertising. Candidates may enjoy researching and presenting different examples to the group. In the case of a live performance, the sampling and synthesised elements of the set may take part of a wider creative project which could involve the planning and preparation of a group performance.

Candidates must be aware of, and adhere at all times to the requirements of current copyright legislation in relation to the creation, performance and use of music and other forms of intellectual property.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

There are opportunities for candidates to develop aspects of the Core Skill *Problem Solving* through the variety of tasks candidates are required to complete as part of all three Outcomes.

There are also opportunities for candidates to develop aspects of the Core Skill *Working with Others*. This can be achieved through candidates working together to assist with the creation of each other's recordings or performances.

Candidates will also have the opportunity to develop aspects of the Core Skill of *Information Technology* if they use recording and editing software.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

The technical skills of synthesis and sampling are assessed in Outcomes 1 and 2; while the application of the skills is assessed in Outcome 3.

An assessor checklist may facilitate the documentation of product evidence.

Please find below suggested strategies for assessment:

National Unit Specification: support notes (cont)

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OUTCOME 1

Practical exercise in response to a brief:

The candidate is required to use synthesiser programming skills to show competency in creating patches on a variety of synthesisers, programming at least one sound as specified by the teacher/lecturer on three different synthesisers. The assessor may choose to assess the candidate from a variety of synthesis types, which could include: FM synthesis, additive synthesis, granular synthesis, subtractive synthesis, physical modelling, Wavetable synthesis and linear arithmetic synthesis. Although not mandatory, the three programmed sounds may emulate three different instruments, for example: a kick drum, bass guitar, evolving ambient texture.

The candidate is required to save the programmed sound patches onto a safe secure digital format for future recall. Where this is not possible, in the case of some analogue synthesisers, a written note of the settings and parameters should be provided as part of the assessment evidence.

OUTCOME 2

Practical exercise in response to a given brief:

Using a microphone connected to a computer-based recording and editing program or hardware sampler, the candidate is to record a collection of sounds from some everyday objects or sources. These must be clear and undistorted at the point of recording. The candidate is then required to use the editing functions of the program or sampler to ‘top and tail’ the sounds. The assessment is designed to ensure accurate playback of the samples from a sampler, therefore it is not necessary for the sampler to edit the sounds; a digital audio editing program is sufficient.

The candidate should place these samples into a key, key group or zone on one sampler and trigger the samples from a music sequencer in a coherent order to form, for example, a drum rhythm. If desired, the candidate may apply knowledge gained in Outcome 1 to further synthesise the sounds (by, for example, creating loops) however this is not a requirement for the Outcome.

OUTCOME 3

Practical exercise in response to a given brief:

The candidate is required to create a track utilising skills gained from Outcomes 1 and 2 to create a stereo track in response to a given brief. This may take the form of a broadcast ‘ident’ or ‘jingle’ to advertise a product or organisation. Alternatively, it may take the form of a live performance where samples and synthesisers form an integral part of the performance.

The candidate should program or perform a part using at least one self-programmed synthesiser part. Voice, instrument, sound effects or loops could be recorded, using an audio recording program, at least one part of which should be triggered from a sampler. The candidate should employ the knowledge gained in Outcomes 1 and 2 above.

National Unit Specification: support notes (cont)

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The candidate will save the samples and program file onto CD or other backup medium as specified by the centre. In the case of a live performance brief, video recorded evidence may be more appropriate. Additionally, the candidate should provide a mixdown of the audio piece in WAV format at 16 Bit 44.1kHz, or other specified format as stated in the brief.

The track created must accurately address the brief in terms of its length, quality and ability to match the brief, to the assessor's satisfaction. The track should be produced within a specified time period as stated in the brief. Where there is ambiguity of the relevance of the response to the brief, oral questioning may take place between the assessor and candidate. Questions and responses should be noted for verification purposes.

Examples of a given brief for Outcome 3 are as follows:

Example 1 — the candidate is required to produce a piece of audio lasting 30 seconds advertising a product of the candidate's choice. The audio should contain a sound effect, which has been triggered by a sampler, and one originally created synthesised sound. A voiceover may be used to complement the sounds within the advert.

Example 2 — the candidate is required to perform music in a live context, during which a sampler is triggered and an originally created synthesiser patch forms part of the musical performance. The performance should last a minimum of 10 minutes.

Time should be allowed for any necessary re-assessment.

Opportunities for the use of 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 communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

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)*.