



Higher National Unit Specification

General information

Unit title: Stringed Instruments: Practical Acoustics and Materials Testing (SCQF level 7)

Unit code: HN7V 34

Superclass: LJ

Publication date: June 2017

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

Soundboard structures and the materials used in their manufacture are fundamental in having the ability to change the sound characteristics of a musical instrument. Learners will identify, analyse and test a variety of structures and the materials used within them. The different responses generated will help develop learners understanding regarding the suitability of particular materials and architectures for constructing instruments. This unit is suitable for learners in education and learners from industry who wish to extend their knowledge of acoustics.

Outcomes

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

- 1 Investigate soundboard structures.
- 2 Identify and analyse materials used for soundboard structures.
- 3 Make, test and evaluate soundboard structures.

Credit points and level

1 National Unit credit at SQF level 7: (8 SCQF credit points at SCQF level 7)

Higher National Unit Specification: General information (cont)

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Recommended entry to the unit

Opportunities to develop aspects of Core Skills are highlighted in the support notes for 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.

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

Unit title: Stringed Instruments: Practical Acoustics and Materials Testing (SCQF level 7)

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

Investigate soundboard structures.

Knowledge and/or skills

- ◆ Bracing patterns
- ◆ Acoustics (resonant modes)
- ◆ Research

Outcome 2

Identify and analyse materials used for soundboard structures.

Knowledge and/or skills

- ◆ Materials
- ◆ Analysis

Outcome 3

Make, test and evaluate soundboard structures.

Knowledge and/or skills

- ◆ Woodworking
- ◆ Acoustics
- ◆ Evaluation

Higher National Unit Specification: Statement of standards (cont)

Unit title: Stringed Instruments: Practical Acoustics and Materials Testing (SCQF level 7)

Evidence requirements for this unit

Learners will need to provide evidence to demonstrate their knowledge and/or skills across all outcomes by showing that they can:

Outcome 1

- ◆ research historical soundboard structures.
- ◆ identify and select a range of historical soundboard structures.
- ◆ interpret, draw and dimension historical soundboard structures.

Learners could provide folio evidence of research, using correct terminology to identify, describe and draw selected soundboard structures.

Outcome 2

- ◆ identify materials used for structured soundboards.
- ◆ measure selected materials for deflection.
- ◆ analyse the effect of using different material characteristics within structures.

Learners could provide written and/or oral evidence using correct terminology to identify materials, recording their deflection test results. These tests could be conducted within a range of species and dimensions.

Outcome 3

- ◆ produce comparative soundboard structures.
- ◆ test comparative soundboard structures for relevant frequencies.
- ◆ evaluate responses generated by comparative soundboard structures at relevant frequencies.

Learners could provide written/oral evidence giving details of comparative soundboard structures with evaluation data and conclusions from the tested responses generated.



Higher National Unit Support Notes

Unit title: Stringed Instruments: Practical Acoustics and Materials Testing (SCQF level 7)

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 40 hours.

Guidance on the content and context for this unit

This unit has been designed to enable learners to research, construct and evaluate the acoustical properties of soundboard structures. The testing of a variety of materials and differently dimensioned structures will provide learners with knowledge and understanding of the acoustical responses available from a variety of structures.

Testing acoustical structures to find the optimal frequency response can help to achieve a consistent sounding product and assist in maintaining quality standards, similar to those found in the musical instrument manufacturing industry. Deflection testing is a recognised method of achieving a consistent standard.

Guidance on approaches to delivery of this unit

Outcomes 1 and 2 could be lectures, discussion and guided research which will enable the learner to produce full scale structural diagrams. Provision should be made for learners to interpret historical structures and modify them with respect to contemporary practices.

Outcome 3 could be experiments carried out in small groups with the results submitted individually.

As the main thrust is learner centred, space should be made for group discussion and interpersonal constructive dialogue to stimulate the process of learning. Question and Answer sessions could help individuals to clarify the requirements of this unit.

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.

Higher National Unit Support Notes (cont)

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Written/oral evidence could be used for Outcomes 1 and 2 in the form of folio containing research and drawings. Outcome 3 could be physical evidence supported by evidence of evaluation and conclusions drawn from test data.

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

Outcome 1 will enhance *ICT* skills during the process of researching soundboard structures. Numeracy skills are required to produce full scale diagrams and during the process of deflection testing. Group work in Outcome 3 whilst conducting experiments, and communication skills could be developed in report writing.

History of changes to unit

| Version | Description of change | Date |
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General information for learners

Unit title: Stringed Instruments: Practical Acoustics and Materials Testing (SCQF level 7)

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.

In this unit you will research, examine and test soundboard structures and materials to help gain an understanding of the suitability of particular materials and architectures for constructing instruments. The unit will help to develop your knowledge and understanding of how soundboard structures and materials can affect the sound. After the initial research into historical soundboard structures you will produce working drawings. In a small group you will test a variety of materials and differently dimensioned structures. This will provide you with knowledge and understanding of the acoustical responses generated.

Testing acoustical structures to find the optimal frequency response can help you to achieve a consistent sounding product and assist in maintaining quality standards, similar to those found in the musical instrument manufacturing industry.