

# Route map through assessment

**Course: Engineering Science**

**Level: National 4**

This document is intended to assist staff in planning and delivering the overall vision for Curriculum for Excellence.

The vision for the new national qualifications is to create assessment opportunities that follow and support learning and teaching. This follows the principles laid out in *Building the Curriculum 5* and makes assessment a natural part of learning and teaching.

This route map aims to signpost all of the relevant material that is available to support your subject. Your professional judgement is vital and the documents listed below are intended to support you in deciding the most appropriate ways to generate evidence and assess learners.

Education Scotland has produced a professional focus paper for engineering science, and this is a good starting point as it provides support to help develop learning and teaching approaches that take forward the purposes and principles of Curriculum for Excellence through Engineering Science National 4.

[http://www.educationscotland.gov.uk/resources/nq/e/nqresource\\_tcm4748169.asp](http://www.educationscotland.gov.uk/resources/nq/e/nqresource_tcm4748169.asp)

## Engineering Science National 4 course content

This is a new course, replacing Technological Studies. Previous skills, knowledge and understanding will continue to be integrated but the unit titles are different: designing, developing, simulating, building and testing, investigating, electrical, mechanical, civil and chemical engineering, electronics and microcontroller-based control systems and their application, knowledge of mechanical, structural and pneumatics systems and their application, relevance of energy, efficiency and sustainability.

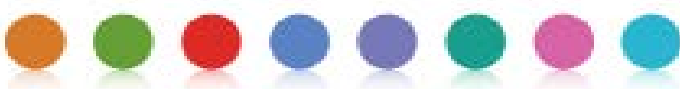
The main SQA engineering science page is found at <http://www.sqa.org.uk/sqa/45648.html>, with pages specifically relating to National 4 at <http://www.sqa.org.uk/sqa/47451.html>. Staff should also regularly check the updates and announcements section of this page.

The course specification can be found at

[http://www.sqa.org.uk/files\\_ccc/CfE\\_CourseSpec\\_N4\\_Technologies\\_EngineeringScience.pdf](http://www.sqa.org.uk/files_ccc/CfE_CourseSpec_N4_Technologies_EngineeringScience.pdf).

There are three units: Engineering Contexts and Challenges, Electronics and Control and Mechanisms and Structures.

**Engineering Contexts and Challenges:** Introduces engineering concepts by exploring a range of engineered objects, and straightforward engineering problems and solutions. Allows learners to explore some existing and emerging technologies and challenges, and to consider implications relating to the environment, sustainable development, and, economic and social issues.



**Electronics and Control:** Focuses on key concepts and devices used in analogue and digital electronic control systems.

**Mechanisms and Structures:** Focuses on developing a basic understanding of simple mechanisms and structures.

To gain an award at National 4 learners must complete all three units as well as the Added Value Unit.

### Added Value Unit

The assignment will focus on challenge and application. This requires learners to apply and integrate skills and knowledge from the other units to solve an appropriately challenging engineering problem.

[http://sqa.org.uk/files\\_ccc/CfE\\_Unit\\_N4\\_EngineeringScience\\_AddedValueUnit.pdf](http://sqa.org.uk/files_ccc/CfE_Unit_N4_EngineeringScience_AddedValueUnit.pdf)

### Verification

The verification process is meant to be supportive and not onerous.

Internal verification is the process of ensuring standards are applied uniformly and consistently within a school in line with national standards. External verification is the process of ensuring that national standards are maintained consistently across all schools.

Quality assurance: <http://www.sqa.org.uk/sqa/58448.html>.

#### *Prior verification*

[http://www.sqa.org.uk/files\\_ccc/Prior%20Verification%20Centre%20Guidance%20FINAL.pdf](http://www.sqa.org.uk/files_ccc/Prior%20Verification%20Centre%20Guidance%20FINAL.pdf)

Staff who devise their own assessments can send them to SQA for prior verification, free of charge. This is only necessary where significant changes have been made to the unit assessment provided. It gives departments confidence that their proposed assessment is fit for purpose and meets national standards.

#### *Internal verification*

[http://www.sqa.org.uk/sqa/files\\_ccc/InternalVerificationGuideforSQAcentres.pdf](http://www.sqa.org.uk/sqa/files_ccc/InternalVerificationGuideforSQAcentres.pdf)

As a matter of course staff should be quality assuring their assessments by carrying out activities that they have always done for NABs, for example double marking and blind marking. A sample of learners' work should be marked by more than one staff member in a department, and in single-person departments an arrangement should be made with another local authority school.

#### *External verification*

In engineering science schools will submit a sample of learners' evidence for scrutiny by subject-specialist qualification verifiers. SQA intend that every school will be verified over the first few years. Verification will take place in November, February and May. Twelve samples will be asked for.

[http://www.sqa.org.uk/sqa/files\\_ccc/Evidence\\_required\\_for\\_verificationevents.pdf](http://www.sqa.org.uk/sqa/files_ccc/Evidence_required_for_verificationevents.pdf)

Schools must retain the evidence until 31 July of each academic year.

[http://www.sqa.org.uk/sqa/files\\_ccc/SQA\\_Evidence\\_retention\\_requirements\\_A3\\_table.pdf](http://www.sqa.org.uk/sqa/files_ccc/SQA_Evidence_retention_requirements_A3_table.pdf)

Key messages from verification will be put up on the SQA website.



## Education Scotland support materials

Advice and support for new national qualifications (Glow password required):

[Engineering Science – Advice and guidance](#)

[Skills in Practice](#)

## Other useful websites

A quick guide to finding vital information about Curriculum for Excellence:

<http://www.educationscotland.gov.uk/keycfesupport/index.asp>

This appears under three headings:

- the latest guidance, updates and plans for embedding Curriculum for Excellence
- information on assessment
- information on the new qualifications.

The BBC has pulled together all its learning content in a new Knowledge and Learning Beta site that includes Class Clips:

[www.bbc.co.uk/education](http://www.bbc.co.uk/education)