Route map through learning, teaching and assessment

Course: Physics

Level: Higher

This route map is intended to assist staff in planning and delivering the overall vision for Curriculum for Excellence. It has been developed to signpost the relevant support materials available to assist staff in the planning of learning, teaching and assessment of Higher Physics.

The vision for the new 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.

Education Scotland has published support materials to help staff develop programmes of learning drawn from three sources: course materials commissioned by Education Scotland, other support materials produced by staff seconded to Education Scotland and course materials provided by staff through their education authorities. Further materials will be added as they become available.

These support materials, which are neither prescriptive nor exhaustive, provide suggestions on approaches to learning and teaching that will promote development of the necessary knowledge, understanding and skills for Higher Physics. Staff are encouraged to draw on these materials, and existing materials, to develop their own programmes of learning which are appropriate to the needs of learners within their own context.

The link to Education Scotland's support materials can be found below together with a number of other subject-specific links staff may find helpful as they develop **programmes of learning** for Higher Physics. These links are followed by a sequential list of the key guidelines, advice and support for the Higher Physics **qualification**. This information is intended to support staff in deciding the most appropriate ways to generate evidence and assess learners.

Useful links for learning and teaching Higher Physics

Education Scotland NQ Course Materials (Glow login and password required – cut and paste this link into browser)
http://www.educationscotland.gov.uk/nqcoursematerials/subjects/physics/index.asp

NQ Higher Sciences website
http://www.educationscotland.gov.uk/highersciences/index.asp

Science Glow 365 site
http://bit.ly/glowsciences

Education Scotland NQs support
http://www.educationscotland.gov.uk/nationalqualifications/subjects/physics.asp

National Assessment Resource (Glow login and password required)
https://www.narscotland.org.uk/

Key Curriculum for Excellence support
A quick guide to finding vital information about Curriculum for Excellence under the following headings:

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

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

BBC
The Knowledge and Learning Beta site includes class clips.
www.bbc.co.uk/education

The Bitesize websites have also been updated for Higher.
http://www.bbc.co.uk/education/subjects/zpyb4wx

Higher Physics course content

The main SQA physics page is found at http://www.sqa.org.uk/sqa/45729.html. Pages specifically relating to Higher are at http://www.sqa.org.uk/sqa/47916.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_CourseSpecification_Higher_Sciences_Physics.pdf.

There are four units: Our Dynamic Universe, Researching Physics, Electricity, and Particles and Waves.

More detail on course coverage can be found in the course support notes.
http://www.sqa.org.uk/files_ccc/CfE_CourseUnitSupportNotes_Higher_Sciences_Physics.pdf

Further mandatory information on course coverage is found on page 8 of the course assessment specification.
http://www.sqa.org.uk/files_ccc/CfE_CourseAssessSpec_Higher_Sciences_Physics.pdf

A course comparison between National 5 and Higher can be found at
http://www.sqa.org.uk/sqa/files_ccc/H_Physics_Course_comparison.pdf.

Unit assessment

Units are mandatory when taken as part of the Higher Physics course but they can be taken independently. Unit support notes follow on from the course support notes.
http://www.sqa.org.uk/files_ccc/CfE_CourseUnitSupportNotes_Higher_Sciences_Physics.pdf

Each individual unit also has a unit specification.

Each unit specification gives details of the outcomes and assessment standards. There are two outcomes per unit: one based on skills of scientific inquiry and one based on applying scientific skills.

Physics: Our Dynamic Universe
http://www.sqa.org.uk/files_ccc/CfE_Unit_H_Physics_OurDynamicUniverse.pdf

Physics: Particles and Waves
http://www.sqa.org.uk/files_ccc/CfE_Unit_H_Physics_ParticlesandWaves.pdf

Physics: Electricity
http://www.sqa.org.uk/files_ccc/CfE_Unit_H_Physics_Electricity.pdf

Researching Physics
http://www.sqa.org.uk/files_ccc/CfE_Unit_H_Physics_ResearchingPhysics.pdf

Learners must meet all the outcomes and assessment standards, and staff should read the documentation carefully. Evidence should be generated through learning and teaching. Assessment evidence can be drawn from a variety of activities and presented in a variety of formats. All of the evidence does not have to be generated from one activity but can be from several tasks and assessments carried out throughout the course. Learners should have access to resources to complete the assessment task and no time restrictions should be imposed. Staff should use their professional judgment when looking at the assessment evidence and ensure that minimum competency is met. They should undertake quality assurance regularly.

Three different ways of gathering evidence have been suggested by SQA. The most traditional approach is unit by unit. A combined approach links knowledge and understanding from two or more units together. Many staff will move towards the portfolio approach as their confidence grows. Here evidence is gathered from everyday learning using key classroom tasks. Unit assessment support is kept on the SQA Secure website.

Course assessment

At Higher added value will be assessed in a course assessment, which consists of two components: a question paper and an assignment. The course will be graded A–D.
http://www.sqa.org.uk/files_ccc/CfE_CourseAssessSpec_Higher_Sciences_Physics.pdf

Component 1 – Question paper

The question paper will have 130 marks and will be scaled to 100 marks.

The question paper will have two sections:
Section 1 will have 20 marks.
Section 2 will contain restricted and extended response questions and will be scaled from 110 to 80 marks.

Marks will be distributed approximately proportionately across the units. The majority of the marks will be awarded for applying knowledge and understanding. The other marks will be awarded for applying scientific inquiry, scientific analytical thinking and problem-solving skills.

The purpose of the question paper is to assess breadth and depth of knowledge and understanding from across the units.

The paper will assess scientific inquiry skills, analytical thinking skills and the impact of applications on society and the environment.

A specimen question paper and marking schemes can be found at http://www.sqa.org.uk/files_ccc/PhysicsSQPH.pdf.

Component 2 – Assignment

The purpose of the assignment is to assess the application of skills of scientific inquiry and related physics knowledge and understanding.

The assignment requires learners to apply skills, knowledge and understanding to investigate a relevant topic in physics. The topic should draw on one or more of the key areas of the course, and should be chosen with guidance from staff.

The assignment will have 20 marks out of a total of 120 marks. The majority of the marks will be awarded for applying scientific inquiry and analytical thinking skills. The other marks will be awarded for applying knowledge and understanding related to the topic chosen.

Verification

The verification process is meant to be supportive and not onerous. Internal verification is the process of ensuring that 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 and is carried out by SQA. Information on quality assurance can be found at http://www.sqa.org.uk/sqa/58448.html.

Prior verification

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 by SQA. 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

As a matter of course staff should be quality assuring their assessments by carrying out moderation activities. 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

Schools should 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. Twelve samples will be requested.
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

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

Results services

http://www.sqa.org.uk/sqa/files_ccc/FA6669_SQA_Results_Services_A5_8pp_brochure_web.pdf
http://www.sqa.org.uk/sqa/65427.html

SQA offer two services to replace the appeals service:

- Exceptional Circumstances Consideration Service (details to be provided to SQA within ten days of the learner sitting the external assessment)
- Post-results Service – this consists of a clerical check or a marking review if the centre has concerns about the results of an individual or group.

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