

Draft National Unit Specification



Unit title: Chemistry: Chemical Changes and Structure (National 5)

SCQF: level 5 (6 SCQF credit points)

Unit code: to be advised

Unit outline

The general aim of this Unit is to develop skills of scientific inquiry, investigation, analysis and knowledge and understanding of concepts of chemical changes and structure. This can be done using a variety of approaches, including investigation and problem solving. Learners will apply these skills when considering the applications of chemical changes and structure on our lives, as well as environmental and/or ethical implications. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Learners who complete this Unit will be able to:

- 1 Draw on knowledge, understanding and skills to investigate, through experimentation, the chemistry of acids and bases
- 2 Use knowledge and understanding of chemical changes and structure

This Unit is a mandatory Unit of the Chemistry (National 5) Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes* which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in the *National Assessment Resource*.

Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ Chemistry (National 4) Course or relevant component Units
- ◆ Science (National 4) Course or relevant component Units

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Unit. Further information on relevant experiences and outcomes will be given in the *Unit Support Notes*.

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. For further information please refer to the *Unit Support Notes*.

Draft

Standards

Outcomes and assessment standards

Outcome 1

The learner will:

- 1 **Draw on knowledge, understanding and skills to investigate, through experimentation, the chemistry of acids and bases by:**
 - 1.1 Describing, in detail, a relevant chemical reaction including a balanced equation
 - 1.2 Planning an experiment including accurate data collection, applying safety measures and taking necessary actions to control risk and hazards
 - 1.3 Carrying out an experiment, selecting appropriate equipment
 - 1.4 Recording observations and collecting data using chemical terminology
 - 1.5 Processing the results
 - 1.6 Drawing valid conclusions that are consistent with data and related to the aim
 - 1.7 Outlining improvements in the experimental procedure

Outcome 2

The learner will:

- 2 **Use knowledge and understanding of chemical changes and structure to:**
 - 2.1 Describe, in detail, chemical reactions, concepts and processes
 - 2.2 Solve given problems

Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

Evidence can be drawn from a variety of sources and presented in a variety of formats, including participation in group tasks/experiments, written responses to questions, presenting information to other groups, and simple digital presentations.

Evidence may be presented for individual Outcomes or it may be gathered for the Unit as a whole through combining assessment holistically in one single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

Concepts to be covered in the Unit will include atomic structure and bonding, reaction quantities and the chemistry of acids and bases.

In these concepts, evidence will be drawn from:

- ◆ **atomic structure and bonding:** covalent molecular and network, ionic and ion formation, lattices, ionic chemical formulae and balanced equations
- ◆ **reaction quantities:** gram formula mass, the mole
- ◆ **acids and bases:** pH as a measure of hydrogen and hydroxide ions, strong and weak acids, pH of soluble oxides, neutralisation reactions, calculation of average rate titration and spectator ions

Exemplification of assessment will be provided in the *National Assessment Resource*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes*.

Draft

Development of skills for learning, skills for life and skills for work

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

1 Literacy

1.1 Reading

2 Numeracy

2.1 Number processes

2.2 Money, time and measurement

2.3 Information handling

5 Thinking skills

5.3 Applying

5.4 Analysing and evaluating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills should be at the same SCQF level of the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes*.

Administrative information



Published: August 2011 (draft version 1.0)

Superclass: to be advised

History of changes

Version	Description of change	Authorised by	Date

© Scottish Qualifications Authority 2011

This specification may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged. Additional copies of this Unit can be downloaded from SQA's website at www.sqa.org.uk.

Note: readers are advised to check SQA's website: www.sqa.org.uk to ensure they are using the most up-to-date version of the Unit Specification.