



## Chemistry (National 5)

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## Draft National Course Specification

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Please refer to the note of changes at the end of this Course Specification for details of changes from previous version (where applicable).

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## Course outline

<b>Course title:</b>	Chemistry (National 5)
<b>SCQF:</b>	level 5 (24 SCQF credit points)
<b>Course code:</b>	to be advised

### Mandatory Units

**Chemistry: Atoms, Acids and Alkalis (National 5)**      **6 SCQF credit points**

**Chemistry: Nature's Chemistry (National 5)**      **6 SCQF credit points**

**Chemistry: Chemistry in Society (National 5)**      **6 SCQF credit points**

**Course assessment**      **6 SCQF credit points**

This Course includes six SCQF credit points for 40 additional programmed hours to allow preparation for Course assessment. The Course assessment covers the added value of the Course. Further information on the Course assessment is provided in the Assessment section.

### Recommended entry

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

- ◆ Biology (National 4) Course or relevant component Units
- ◆ Chemistry (National 4) Course or relevant component Units
- ◆ Environmental Science (National 4) Course or relevant component Units
- ◆ Physics (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 Course. Further information on relevant experiences and outcomes will be given in the *Course Support Notes*.

## **Progression**

This Course or its components may provide progression to:

- ◆ other SQA qualifications in Chemistry or related areas
- ◆ further study, employment or training

Further details are provided in the Rationale section.

## **Equality and inclusion**

This Course 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 *Course Support Notes* and the *Course Assessment Specification*.

## **Rationale**

All new and revised National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide more time for learning, more focus on skills and applying learning, and scope for personalisation and choice.

In this Course, and its component Units, there will be an emphasis on skills development and the application of those skills. Assessment approaches will be proportionate, fit for purpose and will promote best practice, enabling learners to achieve the highest standards they can.

This Course provides learners with opportunities to continue to acquire and develop the attributes and capabilities of the four capacities as well as skills for learning, skills for life and skills for work.

All Courses provide opportunities for learners to develop breadth, challenge and application, but the focus and balance of the assessment will be appropriate for the subject area.

## **Relationship between the Course and Curriculum for Excellence values, purposes and principles**

Through learning in chemistry, learners develop their interest in and understanding of the world in an engaging and enjoyable way. They engage in a wide range of investigative tasks which, while fostering an enjoyment of Chemistry and learning, allow them to develop important skills to become creative, inventive and enterprising, in a world where the skills and knowledge developed in chemistry are needed across all sectors of society.

Chemistry Courses should encourage resilience, which leads to becoming a confident individual. Successful learners in chemistry think creatively, analyse and solve problems. Chemistry can produce responsible citizens through studying the impact it makes on developing sustainability, and its effect on the environment, society, and the lives of themselves and others.

The Course allows learners to understand and investigate the world. It develops learners' ability to think analytically, creatively and independently, and to make reasoned evaluations. The Course will allow opportunities for learners to acquire and apply knowledge to evaluate environmental and scientific issues, assess risk, and make informed decisions. This leads to the learner developing an informed and ethical view of topical issues. Learners will be able to develop their communication, collaborative working and leadership skills, and be able to apply critical thinking in new and unfamiliar contexts to solve problems.

## **Purpose and aims of the Course**

Science is vital to everyday life and allows us to understand and shape the world in which we live and influence its future. Scientists play a key role in meeting society's needs in areas such as medicine, energy, industry, material development, the environment and sustainability. As the importance and application of science continues to grow and develop, more trained scientists will be required. It is also important that everyone has an informed view of science.

The Course is practical and experiential and develops scientific understanding of issues relating to chemistry. The Course uses the development of chemical theory to build an extensive set of skills for learners. Through application of a detailed knowledge and understanding of chemical concepts, in practical situations, learners develop an appreciation of the impact of chemistry on their everyday lives.

By using the broad skills base and knowledge and understanding of detailed chemistry concepts, learners will become scientifically literate citizens. This will enable them to critically evaluate science-based claims which they will meet as citizens of a modern society, in a world where the body of scientific knowledge and its applications and implications are ever developing.

The Course develops learners' interest in and enthusiasm for chemistry through a variety of contexts relevant to chemistry's impact on society, namely: utilising nature's resources, chemical analysis, and the development of new and novel applications. It offers a broad, versatile and adaptable skill set which is valued in the work place, and forms the basis for progress onto study of chemistry at a higher level, while also providing a knowledge base useful in the study of all of the sciences.

The main aims of this Course are for learners to:

- ◆ acquire and apply knowledge and understanding of chemistry concepts
- ◆ develop scientific and analytical thinking skills in a chemistry context
- ◆ develop applied problem solving skills in a chemistry context
- ◆ develop an understanding of chemistry's role in scientific issues
- ◆ develop understanding of how chemical products are formed and why they are formed
- ◆ develop understanding of relevant applications of chemistry in society

### **Information about typical learners who might do the Course**

The Course provides opportunities for learners to become scientifically literate citizens, while developing their literacy and numeracy skills. It will also develop learners' investigative and experimental skills in a chemistry context. In addition, learners will recognise the impact chemistry makes on developing sustainability and its effect on the environment, society and the lives of themselves and others.

Learners will develop relevant skills for learning, for use in everyday life and in employment. Due to the inter-disciplinary nature of the sciences, learners will benefit from studying chemistry along with the other science subjects, as this enhances their skills, knowledge and understanding.

This Course or its components may provide progression to:

- ◆ National 5 in another science subject
- ◆ Skills for Work Courses (SCQF level 5 or 6)
- ◆ National Certificate Group Awards
- ◆ National Progression Awards (SCQF level 5 or 6)
- ◆ employment
- ◆ Higher Chemistry

## Course structure and conditions of award

### Course structure

The Course is practical and experiential, developing skills in a chemical context. Through a variety of real-life contexts, learners will acquire and apply knowledge and understanding of chemical concepts and develop this through an application-led approach, including practical activities.

By completing this Course, learners will develop important and relevant skills, attitudes and attributes related to chemistry, including: developing scientific and analytical thinking skills in a chemistry context; developing an understanding of chemistry's role in scientific issues; acquiring and applying knowledge and understanding of chemistry concepts; developing understanding of how chemical products are formed; and developing understanding of relevant applications of chemistry in society.

As well as developing specific scientific skills, in areas such as experimentation and investigation, learners will also gain valuable transferable skills, for learning, life and work, such as literacy, numeracy and communication.

The Course will deepen learners' understanding of chemical concepts through a contextual and application-led process, where the concepts of sustainability and the balance between benefit and cost will be addressed.

Units are statements of standards for assessment and not programmes of learning and teaching. They can be delivered in a number of ways.

The Course has three Units totalling 18 SCQF credit points, with an additional six SCQF credit points to allow the use of an extended range of learning and teaching approaches, consolidation of learning, integration, and preparation for external assessment.

#### **Chemistry: Atoms, Acids and Alkalis (National 5)**

In this Unit, learners will build on detailed chemical concepts, utilising these in a variety of qualitative and quantitative analytical applications. The Unit develops skills and raises awareness of ethical and environmental issues in a local and international context, with learners gaining an understanding of how chemistry is involved in the cause, effect and resolution of these issues.

#### **Chemistry: Nature's Chemistry (National 5)**

In this Unit, learners will build on the understanding of a variety of natural resources and associated products to gain knowledge and develop skills. Learners can then apply these skills when considering the ethical and environmental implications of the application of chemical knowledge to fuelling and feeding a modern society.

#### **Chemistry: Chemistry in Society (National 5)**

In this Unit, learners will be introduced to fundamental chemical concepts and apply skills in a variety of areas, such as the development and use of novel and new materials, including forms of energy generation.

## Conditions of award

To gain the award of the Course, the learner must pass all the Units as well as the Course assessment. The required Units are shown in the Course outline section. Course assessment will provide the basis for grading attainment in the Course award.

## Skills and knowledge

Full skills and knowledge for the Course will be given in the *Course Assessment Specification*. A broad overview of the mandatory subject skills, knowledge and understanding that will be assessed in the Course includes:

- ◆ demonstrating knowledge of chemistry by making accurate statements
- ◆ applying chemistry knowledge to new situations, interpreting information and solving problems
- ◆ demonstrating understanding of chemistry by providing explanations and by integrating different areas of knowledge
- ◆ selecting relevant information from a variety of sources
- ◆ presenting information appropriately in a variety of forms
- ◆ processing information accurately, using calculations, where appropriate
- ◆ planning, designing and carrying out experimental procedures to test hypotheses or to illustrate effects
- ◆ evaluating experimental procedures
- ◆ drawing valid conclusions and giving explanations supported by evidence or justification
- ◆ making predictions and generalisations based on evidence/information

## Assessment

Information about assessment for the Course will be included in the *Course Assessment Specification*, which will provide full details including advice on how a learner's overall attainment for the Course will be determined.

### Unit assessment

All Units are internally assessed against the requirements shown in the Unit Specification.

They can be assessed on a Unit-by-Unit basis or by combined assessment.

They will be assessed on a pass/fail basis within centres. SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgments are consistent and meet national standards.

The assessment of the Units in this Course will be as follows:

#### **Chemistry: Atoms, Acids and Alkalis (National 5)**

Learners who complete the Unit will be able to:

- ◆ demonstrate planning, designing, carrying out and evaluating experimental procedures or investigations in the context of the atoms, acids and alkalis
- ◆ demonstrate skills of applying knowledge and understanding related to atoms, acids and alkalis

#### **Chemistry: Nature's Chemistry (National 5)**

Learners who complete the Unit will be able to:

- ◆ demonstrate selecting, processing, presenting and evaluating information in the context of chemistry in nature
- ◆ demonstrate skills of applying knowledge and understanding related to nature's chemistry

#### **Chemistry: Chemistry in Society (National 5)**

Learners who complete the Unit will be able to:

- ◆ demonstrate analysing and evaluating information, drawing conclusions, giving explanations and making predictions in the context of chemistry in society
- ◆ demonstrate skills of applying knowledge and understanding related to chemistry in society

Exemplification of possible assessment approaches for these Units will be provided in the *National Assessment Resource*.

## **Course assessment**

Courses from National 4 to Advanced Higher include assessment of [added value](#)<sup>1</sup>. At National 5, Higher and Advanced Higher, the added value will be assessed in the Course assessment. The added value for the Course must address the key purposes and aims of the Course as defined in the Course Rationale. It will do this by addressing one or more of breadth, challenge or application.

In this Course, added value will focus on breadth, challenge and application.

Learners will draw on and extend the skills they have learned during the Course. This will be assessed within a [question paper](#)<sup>2</sup> and a coursework [assessment](#)<sup>3</sup>, requiring demonstration of the breadth of knowledge and skills acquired from across the Units in unfamiliar contexts and/or integrated ways.

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<sup>1</sup> Definitions can be found here: [www.sqa.org.uk/sqa/45528.html](http://www.sqa.org.uk/sqa/45528.html)

<sup>2</sup> See link above for definition

<sup>3</sup> See link above for definition

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

*(Note: The information given below reflects the initial thinking on significant opportunities for development of skills for learning, skills for life and skills for work. These may be subject to change as the development process progresses.)*

It is expected that learners will also develop broad, generic skills through this Course. The skills that are likely to be appropriate for this Course 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 Course where there are appropriate opportunities.

### **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 skills is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills will be appropriate to the level of the Course. Further information on building in skills for learning, skills for life and skills for work for the Course is given in the *Course Support Notes*.

## Administrative information

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**Superclass:** to be advised

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## History of changes to National Course Specification

Course details	Version	Description of change	Authorised by	Date

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Note: You are advised to check SQA's website ([www.sqa.org.uk](http://www.sqa.org.uk)) to ensure you are using the most up-to-date version of the Course Specification.