

# National 5 Laboratory Science Skills for Work Course Specification (C781 75)

This document is for teachers and lecturers and contains mandatory information required to deliver the course.

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Please refer to the 'History of changes' at the end of this course specification for details of changes from previous version (where applicable).

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# Course overview

**SCQF credit points:** 24 SCQF credit points

**Course code:** C781 75

## Mandatory units

HN9X 75	<i>Laboratory Science: Careers Using Laboratory Science</i> (National 5) <b>OR</b>	6 SCQF credit points
HT8X 75	<i>Laboratory Science: Careers Using Laboratory Science — Scotland</i> (National 5)	6 SCQF credit points
HN9W 75	<i>Laboratory Science: Working in a Laboratory</i> (National 5)	6 SCQF credit points
J2W3 75	<i>Laboratory Science: Practical Skills</i> (National 5)	6 SCQF credit points
J2W4 75	<i>Laboratory Science: Practical Investigation</i> (National 5)	6 SCQF credit points

Recommended entry	Progression
<p>Entry to this course is at the discretion of the centre.</p> <p>Learners should have achieved:</p> <ul style="list-style-type: none"> <li>◆ National 4 or National 5 Mathematics, or SCQF level 4. or SCQF level 5 units in Mathematics</li> </ul> <p>and one from:</p> <ul style="list-style-type: none"> <li>◆ National 4 Science, Biology, Chemistry or Physics</li> <li>◆ National 5 Biology, Chemistry or Physics</li> <li>◆ SCQF level 4 or SCQF level 5 units in Biology, Chemistry, Physics</li> </ul> <p>or equivalent qualifications and/or experience before starting this course.</p>	<ul style="list-style-type: none"> <li>◆ other qualifications in applied sciences or related areas</li> <li>◆ further study, employment and/or training in science laboratories</li> </ul>

## Core Skills

Learners who achieve this course get automatic certification for:

Complete Core Skill(s)      Problem Solving at SCQF level 4

Core Skill component(s)      Using Number at SCQF level 4

The course support notes highlights opportunities for learners to develop aspects of Core Skills.

## Links to National Occupational Standards

National Occupational Standards (NOS) are developed by the key employment sectors of the United Kingdom. These standards set the competences required for job roles within a particular employment sector.

The sector skills council for science, engineering and manufacturing technology is SEMTA. Laboratory science is also linked to the sector skills councils for other industries, such as environmental and land-based industries; chemical, nuclear, oil, petroleum, polymer and pharmaceutical industries; electricity, gas, waste management and water industries; healthcare sector, including pharmacy services; and food and drinks industries.

This course introduces some of the underpinning knowledge and skills required for the occupational standards at level 2. Some activities in the units of the course broadly reflect aspects of the NOS for level 2 Laboratory Science: Compound Analysis (CA) and Clinical Laboratory Support (CLS). The course also introduces some competences in the occupational standards for the Skills for Health Sector — Bioscience.

In this course, the *Laboratory Science: Working in a Laboratory* (National 5) unit broadly reflects the following aspects:

- ◆ maintaining health and safety in a laboratory environment (CA)
- ◆ measuring, weighing and preparing solutions for laboratory use (CA)
- ◆ communicating laboratory information to authorised personnel under supervision (CA)
- ◆ assisting with the preparation of solutions for laboratory use (CA)
- ◆ maintaining health and safety in a chemical laboratory environment (CLS)
- ◆ preparation of solutions for use in the laboratory (CLS)

The *Laboratory Science: Practical Skills* (National 5) unit broadly reflects the following aspects:

- ◆ maintaining health and safety in a laboratory environment (CA)
- ◆ assisting with the preparation of microbiological specimens and samples for laboratory investigations (CA)

- ◆ assisting with the processing of liquid compounds and samples using manual laboratory techniques (CA)
- ◆ following aseptic procedure in the laboratory environment (CA)
- ◆ communicating laboratory information to authorised personnel under supervision (CA)
- ◆ perform manual laboratory techniques (CLS)
- ◆ work in aseptic and clean room conditions (Bioscience)
- ◆ preparing culture media and solutions for laboratory use (CA)

The *Laboratory Science: Practical Investigation* (National 5) unit broadly reflects the following aspect:

- ◆ maintaining health and safety in a laboratory environment (CA)

Further details are provided in the 'Course rationale' section.

## **Equality and inclusion**

This course is designed to be as fair and as accessible as possible with no unnecessary barriers to learning or assessment.

Guidance on assessment arrangements for disabled candidates and/or those with additional support needs is available on the assessment arrangements web page:

[www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

# Common rationale for all Skills for Work courses

Skills for Work courses help learners to develop:

- ◆ skills and knowledge in a broad vocational area
- ◆ Skills for Learning, Skills for Life and Skills for Work
- ◆ Core Skills
- ◆ an understanding of the workplace
- ◆ positive attitudes to learning
- ◆ skills and attitudes for employability

Experiential learning is the process of learning and reflecting through practical experience, and is a key feature of these courses.

Approaches to learning through practical experience should include:

- ◆ learning in real or simulated workplace settings
- ◆ learning through role play activities in vocational contexts
- ◆ carrying out case study work
- ◆ planning and carrying out practical tasks and assignments

Approaches to learning through reflecting at all stages of the experience should include:

- ◆ preparing and planning for the experience
- ◆ reflecting on the experience throughout and adapting as necessary
- ◆ reflecting after the activity has been completed, evaluating and identifying learning points

## Core Skills

The five Core Skills are:

- ◆ Communication
- ◆ Numeracy
- ◆ Information and Communication Technology
- ◆ Problem Solving
- ◆ Working with Others

# Employability skills

To gain and maintain employment, including self-employment, learners need the following skills and attitudes:

- ◆ generic skills and attitudes valued by employers
- ◆ understanding of the workplace and the employee's responsibilities, for example time-keeping, appearance, and customer care
- ◆ self-evaluation skills
- ◆ positive attitude to learning
- ◆ flexible approaches to solving problems
- ◆ adaptability and positive attitude to change
- ◆ confidence to set goals, reflect, and learn from experience
- ◆ specific vocational skills and knowledge

You can provide learners with direct access to workplace experiences, or you can use partnership arrangements to provide different learning environments and experiences that simulate aspects of the workplace. These experiences might include visits, visiting speakers, role play, and practical activities.

*A Curriculum for Excellence* (Scottish Executive, 2004) identifies aspirations for every young person. These are that they should become:

- ◆ successful learners
- ◆ confident individuals
- ◆ responsible citizens
- ◆ effective contributors

The learning environments, the focus on experiential learning, and the opportunities to develop employability skills, Skills for Learning, Skills for Life, Skills for Work, and Core Skills in these courses contribute to meeting these aspirations.

## Course rationale

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.

This course emphasises developing and applying skills. Assessment approaches are proportionate, fit for purpose and promote best practice, enabling learners to achieve the highest standards they can.

This course is designed to provide learners with opportunities to develop Core Skills and Skills for Learning, Skills for Life and Skills for Work, with a strong focus on enhancing skills and attitudes for employability.

The Scottish Government and Scottish Enterprise have identified science as vital to the prosperity of the Scottish economy. The sector skills councils related to science disciplines have identified a future need for recruitment, due to retirement and expansion of industries using scientific skills at both technician and graduate level.

The National 5 Laboratory Science Skills for Work Course introduces learners to the knowledge and skills required for employment or further study in the industries and services using laboratory science. It also develops awareness of the range of employment opportunities within the sector.

The course builds on existing partnerships between schools, colleges, employers and other training providers. This allows learners to study in appropriate learning environments that have access to relevant teaching expertise and laboratories.

The units of the course give learners opportunities to improve their skills in communication, numeracy, working with others, planning and organising, problem solving, self-review and evaluation.

## Purposes and aims

The general aims of the course are to:

- ◆ encourage more school learners to participate in vocationally-related learning
- ◆ introduce learners to working in a laboratory
- ◆ encourage learners to develop a good work ethic, including time management, and a positive attitude
- ◆ provide opportunities to develop a range of Core Skills through practical experience in a vocational environment
- ◆ encourage learners to take charge of their own learning and development
- ◆ provide a range of teaching, learning and assessment styles to motivate learners to achieve their full potential
- ◆ help learners to progress to further or higher education and training
- ◆ help build learners' confidence

The specific aims of the course are to:

- ◆ encourage learners to consider a career in industries and services using laboratory science
- ◆ develop an awareness of the types and range of career options within industries and services
- ◆ develop the basic practical laboratory skills of measuring, weighing and preparing compounds and solutions for laboratory use
- ◆ develop the skills of communicating laboratory information
- ◆ develop learners' understanding of, and how to implement, the health and safety requirements for a safe working environment develop problem solving and numeracy skills in the context of a laboratory

- ◆ provide opportunities for learners to develop skills and attitudes that will improve their employment potential within a sector
- ◆ develop learners' awareness of their strengths and weaknesses in relation to the requirements of a sector, and to reflect on how this affects their employability potential

## **Who is the course for?**

Secondary school pupils in S3 and above are the target group for this course. However, the course is also suitable for learners seeking to enhance their employability and vocational skills in laboratory science.

# Course structure and conditions of award

## Summary of course content

The course provides a broad experiential introduction to laboratory science.

Learners explore a variety of local, national and global industries and services and the career opportunities in science laboratories. Learners develop the basic practical laboratory skills: measuring, weighing and preparing compounds and solutions, and understanding and implementing the health and safety requirements for a safe working environment. They also develop specific practical skills related to microbiology, radioactivity, chemical handling and analysis, and laboratory equipment. Learners produce a plan to carry out a practical investigation to investigate an aim related to a scientific topic. This involves reporting results, conclusions and evaluations of the investigation.

The course emphasises the employability skills and attitudes valued by employers, which help to prepare learners for the workplace. Learners review employability skills and seek feedback from their peers and teaching staff as appropriate. They evaluate their own strengths and weaknesses, personal skills, qualifications and experience against career options.

The employability skills assessed in this course are:

- ◆ ability to follow instructions
- ◆ awareness of health and safety in a laboratory
- ◆ appropriate use of resources
- ◆ positive attitude to learning
- ◆ flexible approach to problem solving
- ◆ confidence to set goals, reflect and learn from experience
- ◆ time-management skills
- ◆ communication skills
- ◆ presentation skills
- ◆ numeracy skills
- ◆ basic practical skills of weighing, measuring, preparing solutions
- ◆ working co-operatively with others
- ◆ confidence to seek feedback
- ◆ review and self-evaluation skills
- ◆ working independently

## Summary of unit content

Units are statements of standards for assessment and not programmes of learning and teaching. You can deliver the units in a variety of ways; however, Skills for Work units are designed to provide an experiential learning process.

### **Laboratory Science: Careers using Laboratory Science (National 5) or Laboratory Science: Careers using Laboratory Science — Scotland (National 5)**

This unit introduces learners to the wide range of industries and services that use scientific knowledge and laboratory skills. They learn about the variety of ways in which science and laboratory skills are used in different industries and services and about the job roles that use these skills. Learners investigate a range of career opportunities in industries and services that use laboratory science. They investigate the skills, qualifications and experience required for a job role of personal interest in the field of laboratory science. Learners prepare for employment, further education or training through producing their own curriculum vitae (CV) for a specific job role in a laboratory science setting.

Learners reflect on and evaluate their own employability skills and attributes throughout the unit.

### **Laboratory Science: Working in a Laboratory (National 5)**

This unit provides learners with the opportunity to learn basic laboratory skills such as handling chemicals and preparing solutions, and calculate and present results of their practical work. To maintain health and safety while working in a laboratory environment, learners follow safety and security procedures, and carry out a risk assessment. There are opportunities for learners to develop numeracy and communication skills when they record and report on their practical work.

### **Laboratory Science: Practical Skills (National 5)**

This unit provides learners with the opportunity to develop the skills most commonly used in laboratories. Health and safety is integral to the unit. Learners learn how to:

- ◆ work safely with potentially hazardous materials, such as microorganisms
- ◆ measure radioactivity
- ◆ develop competence using laboratory equipment
- ◆ perform a titration, chromatography and distillation

### **Laboratory Science: Practical Investigation (National 5)**

In this unit, learners work to produce a plan, including practical procedures, to investigate a scientific topic. They devise methods that include a practical procedure to test the aim. Learners are assessed on their ability to carry out the practical procedure competently and safely. Learners produce a scientific report with their individual analysis and evaluation.

## **Conditions of award**

To achieve the award of the National 5 Laboratory Science Skills for Work Course, learners must achieve all the required units. Skills for Work courses are not graded. They will be assessed on a pass/fail basis within centres.

# Assessment

## Assessment objectives

Assessment across the units of this course allows learners to demonstrate:

- ◆ laboratory practical skills: measurement, preparation of solutions, equipment
- ◆ scientific data collection and reporting skills
- ◆ health and safety procedures
- ◆ knowledge and understanding of working in a laboratory
- ◆ generic and specific employability skills and attitudes valued by employers
- ◆ planning and investigating skills
- ◆ review and evaluation skills
- ◆ working with others in teams
- ◆ self-evaluation skills

## Unit assessments

You can assess the units in a variety of ways, as appropriate to your context. To support this, the assessment support packs provide possible assessment approaches.

### **Laboratory Science: Careers using Laboratory Science or Laboratory Science: Careers using Laboratory Science — Scotland (National 5)**

Learners must produce written and/or oral evidence of their knowledge of different industries and services, job roles, career options and the skills, qualifications and experience needed for a job role in the field of laboratory science. Learners gather evidence, in open-book conditions at appropriate points throughout the unit, in a folio.

Learners must produce a CV, using a template, for a job role with a laboratory science setting.

Learners must also produce three reviews of their employability skills. They must complete these reviews at appropriate points throughout the course. They must gather feedback from their teacher or lecturer on two occasions and another person on one occasion. The other person could be another learner or a placement supervisor.

### **Laboratory Science: Working in a Laboratory (National 5)**

Learners must produce evidence for the three outcomes in open-book conditions throughout the unit.

Performance evidence must show that learners are able to prepare a chemical solution and deal with a simulated chemical spill. Learners must also carry out practical activities to

measure mass and volume. You must record evidence of learner performance using assessor observation checklists.

Written evidence is required to demonstrate that learners can carry out a risk assessment in a scientific laboratory, record measurements taken, and perform a range of calculations on these measurements.

### **Laboratory Science: Practical Skills (National 5)**

Learners must produce performance evidence during a range of practical activities. Working safely with microorganisms in a laboratory setting requires learners to pour agar plates using aseptic techniques, subculture microorganisms, and prepare wet and dry mounts. Learners must measure and detect radioactivity using the appropriate equipment. During two separate practical activities, learners must use two types of equipment appropriately. Each instrument must cover a different scientific application. Using appropriate equipment, learners must safely perform chemical analysis including a titration, chromatography and distillation. You must use assessor observation checklists to record evidence of performance.

Learners must produce written evidence under supervised, closed-book conditions to demonstrate that they can explain the safety requirements of working with radioactive materials. They must also produce written evidence of their ability to accurately record measurements.

### **Laboratory Science: Practical Investigation (National 5)**

Learners must produce written evidence to demonstrate that they can plan a practical investigation, record results and observations in an appropriate format using the correct SI units, state valid conclusions, and evaluate the results and observations from the investigation. Learners should use templates for the plan and report to help them produce their evidence in supervised conditions.

Performance evidence supported by a written report. Learners must carry out the practical task in controlled supervised conditions.

Performance evidence is gathered through a written report.

Learners must identify strengths and areas for improvement in terms of planning and implementing the investigation. They must take account of feedback from others as part of this review and identify action points in the report.

## Quality assurance

Centres must internally verify all assessment instruments using their own appropriate policies and SQA's guidelines.

SQA externally verifies internal assessments to ensure that they meet the national standards as defined in the course and unit specifications.

Further information on internal and external verification can be found in SQA's *Guide to Assessment* ([www.sqa.org.uk/sqa/3083.html](http://www.sqa.org.uk/sqa/3083.html)).

# Developing Skills for Learning, Skills for Life and Skills for Work

Developing employability skills, the skills and attitudes needed to gain and maintain employment, is an important part of all Skills for Work courses. Learners are also expected to develop broad, generic skills in this course as listed below.

## **1 Literacy**

- 1.1 Reading
- 1.2 Writing
- 1.3 Listening and talking

## **2 Numeracy**

- 2.1 Number processes
- 2.2 Money, time and measurement

## **3 Health and wellbeing**

- 3.1 Personal learning
- 3.2 Emotional wellbeing
- 3.4 Planning for, and making, choices and changes
- 3.5 Relationships

## **4 Employability, enterprise and citizenship**

- 4.1 Employability
- 4.3 Working with others

## **5 Thinking skills**

- 5.1 Remembering
- 5.2 Understanding
- 5.3 Applying
- 5.4 Analysing and evaluating

SQA's [Skills Framework: Skills for Learning, Skills for Life and Skills for Work](#) contains more information.

You must build these skills into the course where there are suitable opportunities. The course support notes provides suggestions on how to do this.

# Employability skills profile

The following table shows the employability skills included in the units for this course. The units are referred to as A, B, C and D.

- A *Laboratory Science: Careers Using Laboratory Science* (National 5) or  
*Laboratory Science: Careers Using Laboratory Science — Scotland* (National 5)
- B *Laboratory Science: Working in a Laboratory* (National 5)
- C *Laboratory Science: Practical Skills* (National 5)
- D *Laboratory Science: Practical Investigation* (National 5)

Employability skill and/or attitude	Unit
Ability to follow instructions	A, C, D
Awareness of health and safety in a laboratory	A, B, C, D
Appropriate use of resources	A, C, D
Positive attitude to learning	A, C, D
Flexible approach to problem solving	A, D
Confidence to set goals, reflect and learn from experience	A, D
Time-management skills	A, D
Communication skills	A, B, C, D
Presentation skills	A, D
Numeracy skills	A, B, C
Basic practical skills of weighing, measuring, preparing solutions	A, B, C
Working co-operatively with others	A
Confidence to seek feedback	A, D
Review and self-evaluation skills	A, D
Working independently	A, D

The following table shows assessment evidence for units A, B, C and D.

Assessment evidence	Unit
Candidate folio, completed CV, candidate review sheet	A
Candidate folio, assessor observation checklist, written and/or oral evidence	B
Assessor observation checklists, written and/or oral evidence	C
Candidate folio of written and/or oral assessment, written report	D

# Course support notes

These support notes are not mandatory. They provide advice and guidance to teachers and lecturers on approaches to delivering and assessing the Skills for Work course. Please read these course support notes in conjunction with the course specification, unit specifications and the assessment support packs.

## Guidance on approaches to delivery and assessment for this course

You should use learning approaches that are experiential and learner-centred. Learners should develop practical skills in a laboratory and, if possible, in a realistic work environment. Given the practical nature of learning, teaching and assessment, centres should ensure that teaching blocks are long enough to provide learners with a meaningful experience.

### Sequencing and integrating units

Centres should ensure that learners receive an induction to the course that enables them to understand the approaches to learning, teaching and assessment used. The induction should emphasise the generic and industry-specific employability skills learners develop during the course.

Centres can deliver the units in any order, however, learners may benefit from studying the unit *Laboratory Science: Careers Using Laboratory Science* or *Laboratory Science: Careers Using Laboratory Science — Scotland* (National 5) early in the course. This unit covers the broad range of industries, services and career opportunities that involve laboratory science. Outcome 3 requires learners to review their employability skills and this continues throughout the course. This unit can link to the other units in the course. Learners may produce evidence for this unit throughout the course.

Studying the unit *Laboratory Science: Working in a Laboratory* (National 5) early in the course can help learners understand the health and safety requirements of the units *Laboratory Science: Practical Skills* (National 5) and *Laboratory Science: Practical Investigation* (National 5). The skills learners develop in *Laboratory Science: Working in a Laboratory* (National 5) can be reinforced in the two practical units.

Learners can benefit from studying the unit *Laboratory Science: Practical Investigation* (National 5) towards the end of the course because they can build on the skills covered in *Laboratory Science: Working in a Laboratory* (National 5) and *Laboratory Science: Practical Skills* (National 5).

### Guidance on approaches to delivery

Learners achieve maximum benefit from this course if schools work in partnership with colleges and employers. Learners who experience a real working environment gain a broader understanding of working in a laboratory and can develop positive attitudes towards the workplace.

Centres should provide an induction to each unit to help learners understand what is required of them.

Learning and teaching should encourage learners to take responsibility for their own learning and development. In the practical units, learners need to carry out checks on their own work. This provides an opportunity to motivate learners to take pride in their work. The integration of employability skills, in particular self-evaluation skills, allows learners to take responsibility for seeking feedback and identifying action points for improvement in their performance. This helps learners to develop confidence in taking advice and in seeking direction and assistance, where necessary.

As the course is practical, each part of the learning and teaching should incorporate both theory and practice. This helps learners to understand the relevance of knowledge and understanding to practical tasks. Health and safety is integral to all practical tasks and you should emphasise this at the start of, and throughout, each session.

Throughout the course, you should encourage learners to use as many methods as possible to gain information. They should make full use of the internet, journals (online and printed), books, national and local newspapers, friends and family who have knowledge or experience of scientific industries and services, and site visits. You should encourage learners to discuss their thoughts on science, scientific industries and services, careers in science, and their personal preferences with peers and teaching staff.

### **Practical work**

Within the skills-specific practical units, learners produce evidence as a natural part of the teaching and learning process. They learn and practise the correct techniques and methods for each of the skills they undertake. You should assess the practical skills at appropriate points throughout the course.

Each unit is supported by an ASP, which provides exemplar assessment instruments and assessor observational checklists.

### **Visiting speakers and visits to laboratories**

Centres should develop links with employers and industry representatives, who may be able to provide visiting speakers and arrange a visit to a laboratory. This is particularly relevant to the unit *Laboratory Science: Careers Using Laboratory Science* (National 5) or *Laboratory Science: Careers Using Laboratory Science — Scotland* (National 5). Visits are helpful when investigating the different job roles within industries and services and give learners a realistic view of jobs, roles and responsibilities, and conditions within laboratory science.

### **Health and safety**

Health and safety regulation is of paramount importance in this course. The practical units are designed to be taught and assessed in a laboratory environment.

Centres must produce risk assessments that set out the safe working, teaching and learning arrangements for teaching staff, support staff and learners.

Centres must be familiar with the requirements of:

- ◆ *Health and Safety at Work etc Act 1974 (HSWA)*
- ◆ *Management of Health and Safety at Work Regulations (MHSWR)*
- ◆ *Control of Substances Hazardous to Health (COSHH)*
- ◆ *Provision and Use of Work Equipment Regulations (PUWER)*
- ◆ *Safety in Microbiology: A Code of Practice for Scottish Schools and Colleges*
- ◆ other legislative requirements and codes of practice

This list is not exhaustive. Centres **must** comply with all current relevant legislation and guidance, whether it is listed or otherwise.

## **Guidance on approaches to assessment**

You should refer to the unit specification and ASPs for further details about unit assessment for this course.

## **Opportunities for e-assessment**

E-assessment may be appropriate for some assessments in this course. E-assessment is assessment supported by information and communications technology (ICT), such as e-testing, e-portfolios or social software. If you use e-assessment, you must ensure that the national standard is applied to all candidate evidence and that the conditions of assessment specified in the evidence requirements are met. The most up-to-date guidance on using e-assessment to support SQA's qualifications is available at [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

## **Opportunities for developing Core Skills**

You should take opportunities to develop aspects of additional components of Core Skills if these arise naturally. For example, during the activities in the practical units, learners can develop aspects of numeracy by making calculations and analysing results. They can develop communication skills by recording results, conclusions and evaluations of investigations in a written and/or oral format, or when working in a group and communicating with others.

# General information for learners

This section explains:

- ◆ what the course is about
- ◆ what you need to do during the course
- ◆ the opportunities you will have for further learning and employment

## Course overview

The National 5 Laboratory Science Skills for Work Course has four units that focus on the scientific skills used in industries and services involving laboratory science.

The Scottish Government and Scottish Enterprise have highlighted science as an important subject for the prosperity of the Scottish economy. This course develops the scientific skills required for employment or future study in a wide range of areas involving laboratory science. The course covers the opportunities and range of employment available in the laboratory science sector.

## To achieve the course

You must pass all four units to achieve this qualification. There is a mixture of practical and open-book written assessments. The course is not graded.

The four units that you study are:

- ◆ *Laboratory Science: Working in a Laboratory* (National 5)
- ◆ *Laboratory Science: Practical Skills* (National 5)
- ◆ *Laboratory Science: Practical Investigation* (National 5)
- ◆ **and**
- ◆ *Laboratory Science: Careers Using Laboratory Science* (National 5)
- ◆ **or**
- ◆ *Laboratory Science: Careers Using Laboratory Science — Scotland* (National 5)

## Subject-specific knowledge and skills

In the *Laboratory Science: Careers Using Laboratory Science* (National 5) unit or the *Laboratory Science: Careers Using Laboratory Science — Scotland* (National 5) unit, you research a variety and range of industries and services that use laboratory science. You research local, national and global career opportunities in science laboratories and present your findings. You have the chance to investigate the skills, qualifications and experience required for a laboratory science job of interest to you. You also produce a CV for a job in a laboratory science setting. At three points in this unit, you review your skills and set personal targets for improvement.

In the *Laboratory Science: Working in a Laboratory* (National 5) unit, you learn about handling and storing chemicals safely and health and safety. You gain expertise in measuring liquids and weighing solids to prepare various solutions safely. You learn how to write risk assessments and you must write these for the procedures you carry out.

In the *Laboratory Science: Practical Skills* (National 5) unit, you learn how to safely work with microorganisms. This includes preparing agar plates, sub-culturing microorganisms, and preparing microscope slides. You learn how to safely measure radioactivity and record your results. You learn how to take measurements with different types of laboratory instruments and how to use chemical analysis equipment. You develop scientific and numeracy skills when you carry out titrations.

In the *Laboratory Science: Practical Investigation* (National 5) unit, you identify a hypothesis to investigate. You plan a method and carry out a task to test the hypothesis. You write up a scientific report based on the information you gather. You review and evaluate the investigation.

## **Assessment methods**

Your assessments are written and practical. You must gather evidence of your skills in a folio as you work through the four units. You have the opportunity to practise and refine your practical skills before these are formally assessed.

## **Skills development**

The main skills you develop as you work through this qualification are:

- ◆ safely carrying out practical skills, for example measuring, preparing solutions, microbiological techniques, carrying out titrations
- ◆ collecting scientific data
- ◆ recording scientific data
- ◆ knowledge of health and safety procedures
- ◆ generic and specific employability skills
- ◆ planning and investigating skills
- ◆ review and evaluation skills
- ◆ working with others in teams
- ◆ self-evaluation skills

## **Progression routes**

This course may provide progression to:

- ◆ National Certificates in applied science
- ◆ suitable training or employment in science laboratories
- ◆ further or higher education

# Administrative information

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**Published:** January 2020 (version 3.1)

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## History of changes

Version	Description of change	Date
2.0	Course specification moved to a new template. Content updated. Units re-coded.	September 2017
3.1	Course specification moved to a new template. Unit code and information about <i>Laboratory Science: Practical Skills</i> (National 5) unit and <i>Laboratory Science: Practical Investigation</i> (National 5) unit updated.	November 2019
3.1	Level code for <i>Laboratory Science: Practical Skills</i> (National 5) unit and <i>Laboratory Science: Practical Investigation</i> (National 5) units updated from 45 to 75.	January 2020

Note: please check SQA's website to ensure you are using the most up-to-date version of this document.

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