



Group Award Specification for:

HND Applied Biological Sciences at SCQF level 8

Group Award Code: GK6G 16

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1 Introduction

This document was previously known as the Arrangements document. The purpose of this document is to:

- ◆ assist centres to implement, deliver and manage the qualification
- ◆ provide a guide for new staff involved in offering the qualification
- ◆ inform course managers, teaching staff, assessors, learners, employers and HEIs of the aims and purpose of the qualification
- ◆ provide details of the range of learners the qualification is suitable for and progression opportunities

This is the Group Award Specification for the HND Applied Biological Sciences, and it is a revision of the HND Applied Biological Sciences Group Award which had previously been validated in 2005.

Following a detailed consultation process, it was confirmed that a review of the following Group Awards was required: HNC Applied Sciences, HND Applied Sciences, HND Applied Biological Sciences, HND Biomedical Sciences, HND Biotechnology, HND Applied Chemistry and HND Environmental Sciences. The review was to ensure that the Group Awards remain fit-for-purpose and satisfy both current and future industry and education markets. With this in mind, the four current HNDs in Applied Biological Sciences, Biomedical Sciences, Biotechnology, and Environmental Sciences have been streamlined to one new HND in Applied Biological Sciences and modernisation of content has occurred.

Key aspects of the modernisation are to provide greater emphasis to the development of practical laboratory skills and good laboratory practice.

The HND Applied Biological Sciences Group Award will sit in a modernised suite of HND Group Awards alongside the HND Applied Sciences Group Award and the HND Applied Chemical Sciences Group Award. The rationalisation from the current Group Awards will provide enhanced coherence across the three revised HND frameworks and thereby facilitate centres offering more than one HND from the science suite.

Qualifications Design Teams (QDT) were created to support the development process in consultation with employers and higher education colleagues and further education partners. All stakeholders recognised the need for flexibility in the Group Award so that the needs of small groups of learners can be met alongside large cohorts. In designing the Group Award, the QDT has been fully aware of the need for the Group Award to contain relevant technical and transferable skills to enable immediate entry to employment while at the same time allowing articulation to degree courses. The QDT believes that an appropriate balance between academic and vocational knowledge and skills has been achieved throughout the mix of Unit content and potential teaching approaches.

The HND Applied Biological Sciences Group Award is designed for both full and part-time learners and the target audience is those who wish to progress to further study at degree level or to take up a career in science-based industries.

The theoretical content may be delivered by open and distance learning methods, provided that adequate preparations are made. Additional planning and resources will be needed for learner support and assessment. Quality assurance procedures must also be sufficient and robust in order to support open and distance learning.

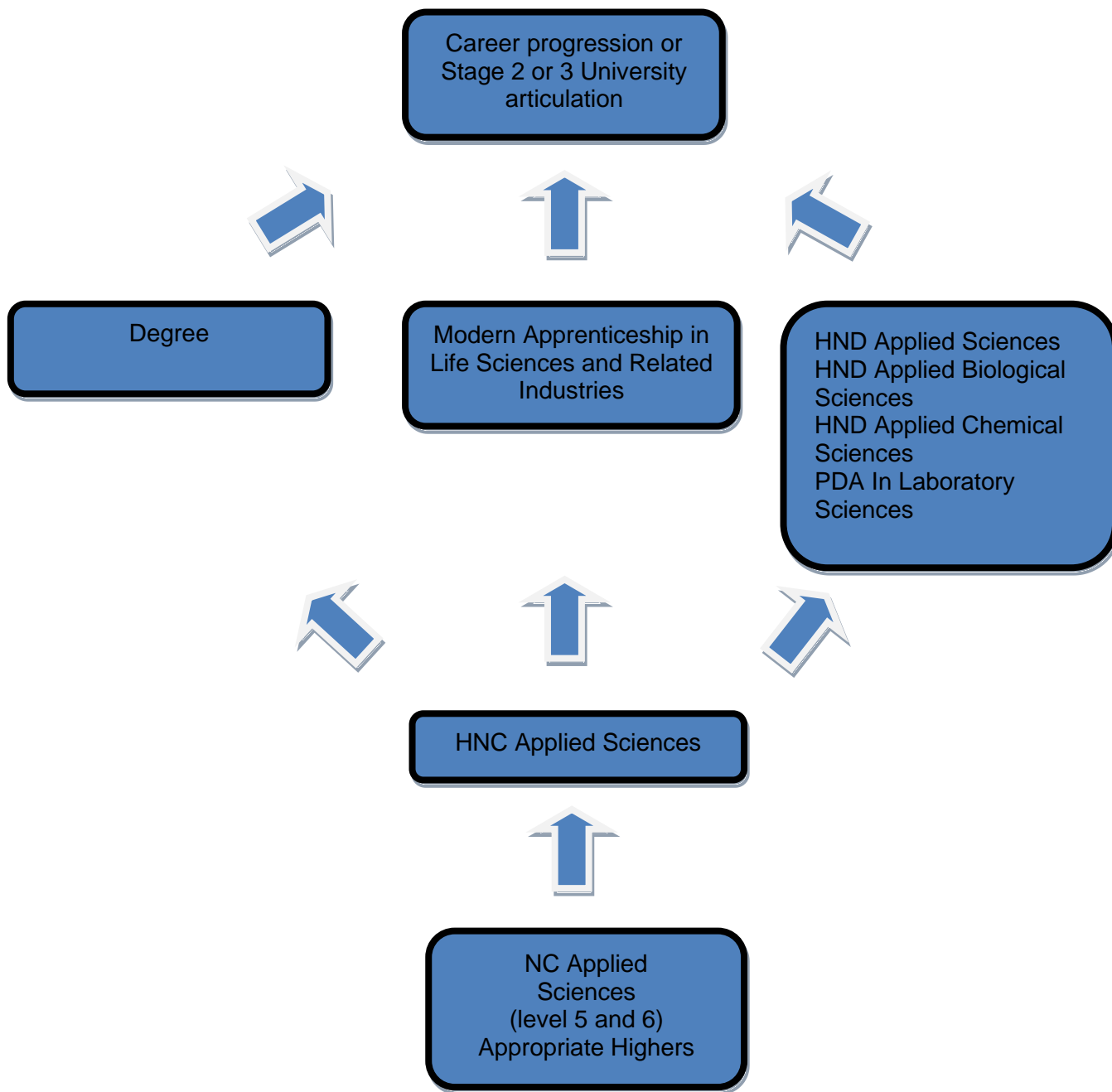
The Group Award is designed as a discrete, specialised qualification to equip learners with the knowledge, skills and understanding required for employment or progression to further academic study, and may be seen to be supporting the national strategies and drivers as outlined below.

The Scottish Life Sciences Strategy states that ‘the Life Sciences industry in Scotland is recognised by both UK and Scottish Governments as one with high growth potential and the capacity to contribute significantly to the nation’s productivity. Scotland hosts the UK’s second largest Life Sciences cluster and one of the most sizeable in Europe. The sector contributes some £1.5 bn of GVA a year and turnover worth £3.1 bn to the Scottish economy.’ The provision of this new Group Award will help to meet the needs of industry.

The Wood Commission Report emphasised that ‘moving beyond school, we must ensure that young people at college pursue studies with an expectation that they will lead successfully to employment in the prevailing labour market. The newly formed regional colleges, through more focused and ambitious outcome agreements, and working closely with industry, should ensure that a college education provides skills and qualifications relevant to the market requirements and in particular the new challenges of the modern technology orientated economy.’ And that ‘as they move into the senior phase, young people of all abilities should have the opportunity to follow industry relevant vocational pathways alongside academic studies.’

The current review has allowed the Group Award to take into account changes that have taken place due to the introduction of Curriculum for Excellence, inclusion of updated technical data, revised assessment strategies, flexibility to meet the needs of industry and recognition of the needs of learners for progression to higher education.

It was agreed at the SQA Higher National Science event in 2013 to maintain a single HNC Group Award, HNC Applied Sciences, from which learners could progress to the three alternative HND awards as detailed above. The interrelationship of the revised HNC/HNDs with other qualifications is illustrated by the diagram following:



2 Qualification structure

Mandatory Units (18 credits)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|-------|----|---|------------|--------------------|------------|
| H91V | 34 | Laboratory Skills for Science Industries | 7 | 16 | 2 |
| H91W | 34 | Applied Sciences: Graded Unit 1 | 7 | 8 | 1 |
| H92X | 34 | Fundamental Chemistry: Theory and Laboratory Skills | 7 | 16 | 2 |
| J2RE* | 34 | Cell Biology: Theory and Laboratory Skills | 7 | 8 | 1 |
| H922 | 34 | Biochemistry: Theory and Laboratory Skills | 7 | 8 | 1 |
| H92G | 34 | Microbiology: Theory and Laboratory Skills | 7 | 16 | 2 |
| J2RF | 34 | DNA and Genetics* | 7 | 8 | 1 |
| H92A | 35 | DNA Molecular Techniques | 8 | 16 | 2 |
| J2GM* | 35 | Microbiological Techniques | 8 | 16 | 2 |
| H92E | 35 | Immunological Techniques | 8 | 8 | 1 |
| H92J | 35 | Protein Structure and Function | 8 | 8 | 1 |
| H91Y | 35 | Applied Biological Sciences: Graded Unit 2 | 8 | 16 | 2 |

*Refer to History of Changes for revision changes.

Mandatory Units (2–4 credits)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|------|----|---------------------------|------------|--------------------|------------|
| H8XP | 33 | Mathematics for Science 1 | 6 | 8 | 1 |
| H8XR | 34 | Mathematics for Science 2 | 7 | 8 | 1 |
| H8XT | 33 | Statistics for Science 1 | 6 | 8 | 1 |
| H8XV | 34 | Statistics for Science 2 | 7 | 8 | 1 |

Depending on the number of credits achieved in the Mathematics and Statistics section above, learners must complete 8–10 credits from optional Sections A–E.

Optional Section A — Biomedical (0–7 credits)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|------|----|-----------------------------------|------------|--------------------|------------|
| H92C | 35 | Human Body Structure and Function | 8 | 16 | 2 |
| H925 | 35 | Biomedical Pathology | 8 | 8 | 1 |
| H924 | 35 | Biomedical Investigations | 8 | 8 | 1 |
| H928 | 35 | Cellular Signalling | 8 | 8 | 1 |
| H92D | 35 | Human Metabolism | 8 | 16 | 2 |

Optional Section B — Whole Organism (0–7 credits)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|------|----|---|------------|--------------------|------------|
| DP4V | 35 | Aquatic Ecosystems | 8 | 8 | 1 |
| DP4X | 35 | Terrestrial Ecosystems | 8 | 8 | 1 |
| DT4X | 35 | Environmental Sampling and Analysis | 8 | 8 | 1 |
| H93A | 34 | Ecology and Ecosystems | 7 | 8 | 1 |
| H921 | 35 | Animal Biology | 8 | 8 | 1 |
| H92H | 35 | Plant Biology | 8 | 8 | 1 |
| H92V | 35 | Environmental Chemistry: Theory and Laboratory Skills | 8 | 8 | 1 |

Optional Section C (0–10 credits)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|------|----|---|------------|--------------------|------------|
| D75X | 34 | Information Technology: Applications Software 1 | 7 | 8 | 1 |
| H920 | 34 | Animal and Plant Cell Culture: An Introduction | 7 | 8 | 1 |
| H91T | 34 | Applied Biochemical Techniques | 7 | 8 | 1 |
| H930 | 35 | Instrumental Techniques 1 | 8 | 8 | 1 |
| H931 | 35 | Instrumental Techniques 2 | 8 | 8 | 1 |
| DN38 | 34 | Sustainable Development | 7 | 8 | 1 |
| H92K | 34 | Science Industry: Key Issues | 7 | 8 | 1 |
| H926 | 34 | Biotechnology: An Introduction | 7 | 8 | 1 |
| DV0N | 35 | Plan an Environmental Management System | 8 | 16 | 2 |
| DN36 | 34 | Earth Science | 7 | 8 | 1 |
| F2G8 | 34 | Environmental Awareness | 7 | 8 | 1 |
| DF82 | 34 | Quality and Health & Safety Systems in Science Industries | 7 | 8 | 1 |
| H93F | 34 | Physics for Life Sciences | 7 | 8 | 1 |

Optional Section D —level 6 Units (0–1 credit)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|------|----|--|------------|--------------------|------------|
| H92W | 33 | Fundamental Chemistry: An Introduction | 6 | 8 | 1 |
| H923 | 33 | Biology: An Introduction | 6 | 8 | 1 |
| H93D | 33 | Physics 1 | 6 | 8 | 1 |

Optional Section E — Broadening Units (0–4 credits)

| Code | | Unit title | SCQF level | SCQF credit points | SQA credit |
|------|----|------------------------------------|------------|--------------------|------------|
| D77H | 34 | Employment Experience 2 | 7 | 8 | 1 |
| DG6E | 34 | Work Role Effectiveness | 7 | 24 | 3 |
| DG6G | 35 | Work Role Effectiveness | 8 | 24 | 3 |
| DE3R | 34 | Personal Development Planning | 7 | 8 | 1 |
| H8T2 | 33 | Workplace Communication in English | 6 | 8 | 1 |

This Group Award is made up of 240 SCQF credit points (30 SQA Unit credits). A minimum of 160 SCQF credit points are required to be achieved from the mandatory sections. Depending on the SCQF credit points achieved from the Mathematics and Statistics section, a further 64–80 SCQF credit points are required from the optional Sections A–E.

To aid centres in guiding learners to make appropriate choices optional Units are grouped as ‘Biomedical’ or ‘Whole Organism’. Biomedical are for those looking to progress to employment or degree level studies in Biomedical Science or related disciplines, whilst whole organism are for those looking to progress to employment or degree level studies in areas such as zoology or environmental science. More bespoke combinations of Units can be delivered by appropriate selection of Units primarily from Section C of the framework. This may be of particular use for those in employment to meet the needs of industry: for example in biotechnology.

SCQF level 6 Units are included in the framework, and they are aimed at learners with little or no subject knowledge and should be used as a building Unit to allow achievement of the mandatory SCQF level 7 Unit. The number of SCQF level 6 Units which contribute to the framework has been restricted in order to ensure the competency level is maintained. A total of 0–32 SCQF credit points can be achieved from the SCQF level 6 Units, with the remainder of the SCQF credits points achieved from a combination of SCQF level 7 and SCQF level 8 Units. Centres who recruit learners requiring to undertake more than one SCQF level 6 Unit from Section D of the Group Award framework should offer the necessary building Units in addition to the Group Award.

The *Applied Sciences: Graded Unit 1* is an investigative report. The purpose of the *Applied Sciences: Graded Unit 1* is to assess the learner’s ability to integrate and apply the knowledge and skills gained in the individual Units in order to demonstrate that they have achieved the specific aims of the Group Award and to grade learner achievement.

The *Applied Biological Sciences: Graded Unit 2* is a laboratory based project, with an associated report. The purpose of the *Applied Biological Sciences: Graded Unit 2* is to assess the learner’s abilities in integrating and applying knowledge and skills, and to also develop high level advanced and independent practical skills.

It is anticipated that in terms of delivery, the majority of Units in Year 1, including the *Applied Sciences: Graded Unit 1*, will be achieved at SCQF level 7. In Year 2, the *Applied Biological Sciences: Graded Unit 2* is at SCQF level 8, and most Units should be at a concomitant level to reflect the competency level of the HND Applied Biological Sciences Group Award.

3 Aims of the qualification

The overall aim of the HND Applied Biological Sciences Group Award is to provide a progressive, integrated and coherent education which will be responsive to the needs of learners, employers and higher institutions.

3.1 General aims of the qualification

The general aims of the HND Applied Biological Sciences Group Award are to develop:

- ◆ knowledge of study, research and analysis.
- ◆ ability to define and solve problems.
- ◆ transferable skills.
- ◆ ability to be flexible and work co-operatively with others.
- ◆ responsibility for own learning.
- ◆ planning, organisation and review/evaluation skills.
- ◆ oral and written scientific communication skills.
- ◆ numerical and ICT skills.
- ◆ employability skills.
- ◆ flexibility, knowledge, skills and motivation as a basis for progression to further study within Higher National qualifications and/or graduate studies.

3.2 Specific aims of the qualification

The aims of the HND Applied Biological Sciences Group Award specify the knowledge and skills required in order to be deemed competent in this subject/occupational area.

The specific aims of the HND Applied Biological Sciences Group Award are to:

- ◆ prepare learners for an appropriate level of employment, in science areas such as research and industrial laboratories; biotechnology, microbiological, pharmaceutical, environmental, and the NHS.
- ◆ develop a range of contemporary vocational skills relating to the use, support and development of systems appropriate to employment at technician or professional level.
- ◆ provide learners with a range of skills to support learning in relevant SVQ 4 level programmes.
- ◆ provide learners with an element of vocational specialisation in a variety of areas such as environmental analysis, biomedical investigations, microbiology, animal biology, plant biology, and biotechnology.
- ◆ prepare learners for progression to further studies in science related disciplines, including direct entry to Stage 3 degree programmes.
- ◆ provide a flexible route to the Group Award, allowing access to those in employment through part-time study and full-time provision.
- ◆ provide a wider range of practical laboratory skills to enhance job prospects through the practical content of the course. These skills should be at SCQF level 8.
- ◆ continue development of practical and conceptual skills from SCQF level 7 to SCQF level 8.

3.3 Graded Units

The purpose of the Graded Units is to assess the learner's ability to integrate and apply the knowledge and skills gained in individual Units to demonstrate that they have achieved the specific aims.

Learners will undertake a 1 credit Graded Unit at SCQF level 7 and a 2 credit Graded Unit at SCQF level 8.

The *Applied Sciences: Graded Unit 1* at SCQF level 7 will take the form of an investigation report. It will cover a range of skills achieved through studying the mandatory Units within the Group Award. It allows learners to use research skills, set timescales, identify main issues, methods and sources of research and develop scientific reporting skills.

Learners will be required to produce reports covering planning, development and evaluation of the investigation.

The investigation allows learners to integrate knowledge and skills gained in the mandatory Units and to maximise such opportunities. Delivery of the *Applied Sciences: Graded Unit 1* should take place during the latter stages of the award.

The *Applied Sciences: Graded Unit 1* is designed to provide evidence that the learner has achieved the following aims of the HND Applied Biological Sciences Group Award:

- ◆ Develop learners' knowledge and skills such as planning, developing and evaluating.
- ◆ Develop employment skills and enhance learners' employment prospects.
- ◆ Enable progression within the Scottish Credit and Qualifications Framework (SCQF).
- ◆ Develop transferable skills including Core Skills.
- ◆ Prepare for employment in a science related post at technician or professional level.
- ◆ Develop a range of vocational skills appropriate to employment at technician or professional level in the science sector.

The *Applied Biological Sciences: Graded Unit 2* at SCQF level 8 will take the form of a laboratory based project with an associated investigation report. It allows learners to use research skills, set timescales, identify main issues, methods and sources of research and develop scientific reporting skills.

Learners will be required to produce a laboratory report covering planning, development and evaluation of the investigation.

The *Applied Biological Sciences: Graded Unit 2* is designed to provide evidence that the learner has achieved the following aims of the HND Applied Biological Sciences Group Award:

- ◆ Prepare learners for an appropriate level of employment.
- ◆ Develop a range of contemporary vocational skills including investigative skills, health and safety skills in a practical environment and enhanced risk assessment skills.
- ◆ Prepare learners for progression to further studies.
- ◆ Provide learners with a wider range of practical laboratory skills.
- ◆ Develop study and research skills.
- ◆ Develop Core Skills such as working with others in a team environment and enhancing communication skills through the use of report writing and working in a laboratory environment.

The *Applied Biological Sciences: Graded Unit 2* will utilise a range of skills achieved through studying the mandatory Units of the Group Award, including practical laboratory skills, but also Good Laboratory Practice (GLP), risk assessments and other aspects of health and safety. To maximise such opportunities delivery of the *Applied Biological Sciences: Graded Unit 2* should take place during the latter stages of the Award. Furthermore it allows learners to extend investigative skills from the *Applied Sciences: Graded Unit 1* into a practical situation, and it allows learners to use laboratory reporting skills by producing a logbook/diary of their activities as well as the final laboratory report.

In addition, learners will develop a variety of supplementary skills which enhance life skills and the educational experience. These skills are associated with enterprise, employability, sustainability and citizenship.

4 Recommended entry to the qualification

Entry to this qualification is at the discretion of the centre. The following information on prior knowledge, skills, experience or qualifications that provide suitable preparation for this qualification has been provided by the Qualifications Design Team (QDT) as guidance only.

Learners would benefit from having attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ A minimum of Biology/Human Biology or Chemistry at Grade C or above at Higher level, and one other Higher with appropriate supporting qualifications at National 5 level (or equivalent) in relevant science and mathematics subjects.
- ◆ NC Applied Sciences level 6.
- ◆ Qualifications in appropriate science and mathematics programmes, such as Access programmes. Learners should have gained some Units at Higher level in appropriate science.
- ◆ Suitable work experience gained in a science laboratory.

It is intended that admission to the HND Applied Biological Sciences Group Award should be as broadly based as possible, but that this should be consistent with the selection of learners who have the appropriate knowledge and skills to successfully achieve the HND Applied Biological Sciences Group Award.

Achieving the HNC Applied Sciences Group Award (with 15 credits) would allow entry direct to second year of the HND Applied Biological Sciences Group Award, providing that learners had undertaken the correct optional Units to allow articulation.

4.1 Core Skills entry profile

The Core Skills entry profile provides a summary of the associated assessment activities that exemplify why a particular level has been recommended for this Group Award. Whilst learners will naturally use and develop aspects of all five Core Skills as they work through the Units making up the Group Award, the information below should be used to identify if additional learning support needs to be put in place. This may be necessary for learners whose Core Skills profile is below the recommended entry level or where learners need to undertake supporting Units in order to develop one (or more) particular Core Skills. Indeed, it may help identify whether learners should be encouraged to do an alternative level or learning programme.

It should be noted that although there is no mandatory entry and exit levels the following is recommended:

| Core Skill | Recommended SCQF entry profile | Associated assessment activities |
|--|---------------------------------------|---|
| Communication | SCQF level 5 | Research, analysis, reports, oral presentation |
| Numeracy | SCQF level 5 | Numerical and graphical presentation, numerical and algebraic calculations |
| Information and Communication Technology (ICT) | SCQF level 5 | Accessing information for research purposes, assimilation and analysis of research information, creation of graphical and narrative material for report and presentation purposes |
| Problem Solving | SCQF level 5 | Critical thinking, planning and evaluation |
| Working with Others | SCQF level 4 | Co-operative working as part of a team for practical activities |

5 Additional benefits of the qualification in meeting employer needs

This qualification was designed to meet a specific purpose and what follows are details on how that purpose has been met through mapping of the Units to the aims of the qualification. Through meeting the aims, additional value has been achieved by linking the Unit standards with those defined in National Occupational Standards and/or trade/professional body requirements. In addition, significant opportunities exist for learners to develop the more generic skills, known as Core Skills, through doing this qualification.

5.1 Mapping of qualification aims to Units

| Code | Unit title | General Aims | | | | | | | | | |
|---------|---|--------------|---|---|---|---|---|---|---|---|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| H91V 34 | Laboratory Skills for Science Industries | X | X | X | X | X | X | X | X | X | X |
| H91W 34 | Applied Sciences: Graded Unit 1 | X | X | X | | X | X | X | X | X | X |
| H92X 34 | Fundamental Chemistry: Theory and Laboratory Skills | X | X | X | X | X | X | X | X | X | X |
| J2RE 34 | Cell Biology: Theory and Laboratory Skills | X | X | X | X | X | X | X | X | X | X |
| H922 34 | Biochemistry: Theory and Laboratory Skills | X | X | X | X | X | X | X | X | X | X |
| H92G 34 | Microbiology: Theory and Laboratory Skills | X | X | X | X | X | X | X | X | X | X |
| J2RF 34 | DNA and Genetics | X | X | X | X | X | X | X | X | X | X |
| H92A 35 | DNA Molecular Techniques | X | X | X | X | X | X | X | X | X | X |
| J2GM 35 | Microbiological Techniques | X | X | X | X | X | X | X | X | X | X |
| H92E 35 | Immunological Techniques | X | X | X | X | X | X | X | X | X | X |
| H92J 35 | Protein Structure and Function | X | X | X | | X | X | X | X | X | X |
| H91Y 35 | Applied Biological Sciences: Graded Unit 2 | X | X | X | | X | X | X | X | X | X |
| H8XP 33 | Mathematics for Science 1 | X | X | X | | X | X | | X | X | X |
| H8XR 34 | Mathematics for Science 2 | X | X | X | | X | X | | X | X | X |
| H8XT 33 | Statistics for Science 1 | X | X | X | | X | X | | X | X | X |
| H8XV 34 | Statistics for Science 2 | X | X | X | | X | X | | X | X | X |
| H92C 35 | Human Body Structure and Function | X | X | X | X | X | X | X | X | X | X |

| Code | Unit title | General Aims | | | | | | | | | |
|---------|---|--------------|---|---|---|---|---|---|---|---|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| H925 35 | Biomedical Pathology | X | X | X | | X | X | X | X | X | X |
| H924 35 | Biomedical Investigations | X | X | X | | X | X | X | X | X | X |
| H928 35 | Cellular Signalling | X | X | X | | X | X | X | X | X | X |
| H92D 35 | Human Metabolism | X | X | X | X | X | X | X | X | X | X |
| DP4V 35 | Aquatic Ecosystems | X | X | X | X | X | X | X | X | X | X |
| DP4X 35 | Terrestrial Ecosystems | X | X | X | X | X | X | X | X | X | X |
| DT4X 35 | Environmental Sampling and Analysis | X | X | X | X | X | X | X | X | X | X |
| H93A 34 | Ecology and Ecosystems | X | X | X | X | X | X | X | X | X | X |
| H921 35 | Animal Biology | X | X | X | X | X | X | X | X | X | X |
| H92H 35 | Plant Biology | X | X | X | X | X | X | X | X | X | X |
| H92V 35 | Environmental Chemistry: Theory and Laboratory Skills | X | X | X | X | X | X | X | X | X | X |
| D75X 34 | Information Technology: Applications Software 1 | X | X | X | | X | X | X | X | X | X |
| H920 34 | Animal and Plant Cell Culture: An Introduction | X | X | X | X | X | X | X | X | X | X |
| H91T 34 | Applied Biochemical Techniques | X | X | X | X | X | X | X | X | X | X |
| H930 35 | Instrumental Techniques 1 | X | X | X | X | X | X | X | X | X | X |
| H931 35 | Instrumental Techniques 2 | X | X | X | X | X | X | X | X | X | X |
| DN38 34 | Sustainable Development | X | X | X | X | X | X | X | X | X | X |
| H92K 34 | Science Industry: Key Issues | X | X | X | | X | X | X | X | X | X |
| H926 34 | Biotechnology: An Introduction | X | X | X | X | X | X | X | X | X | X |
| DN36 34 | Earth Science | X | | X | X | X | X | X | X | X | X |

| Code | Unit title | General Aims | | | | | | | | | |
|---------|---|--------------|---|---|---|---|---|---|---|---|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| DV0N 35 | Plan an Environmental Management System | X | X | X | X | X | X | X | X | X | X |
| F2G8 34 | Environmental Awareness | X | X | X | X | X | X | X | X | X | X |
| DF82 34 | Quality and Health & Safety Systems in Science Industries | X | X | X | | X | X | X | X | X | X |
| H93F 34 | Physics for Life Sciences | X | X | X | X | X | X | X | X | X | X |
| H92W 33 | Fundamental Chemistry: An Introduction | X | X | X | X | X | X | X | X | X | X |
| H923 33 | Biology: An Introduction | X | X | X | X | X | X | X | X | X | X |
| H93D 33 | Physics 1 | X | X | X | X | X | X | X | X | X | X |
| D77H 34 | Employment Experience 2 | | X | X | X | X | X | X | X | X | X |
| DG6E 34 | Work Role Effectiveness (level 7) | X | X | X | X | X | X | X | X | X | X |
| DG6G 35 | Work Role Effectiveness (level 8) | X | X | X | X | X | X | X | X | X | X |
| DE3R 34 | Personal Development Planning | X | X | X | | X | X | | | X | X |
| H8T2 33 | Workplace Communication in English | X | | X | X | X | X | X | X | X | X |

5.2 Mapping of National Occupational Standards (NOS)

The HND Applied Biological Sciences Group Award has been mapped against the level 4 SVQ Life Sciences and Related Industries.

| Code | National Occupational Standard | Laboratory Skills for Science Industries (H91V 34) | Fundamental Chemistry: Theory and Laboratory Skills (H92X 34) | Cell Biology: Theory and Laboratory Skills (J2RE 34) | Biochemistry: Theory and Laboratory Skills (H922 34) | Microbiology: Theory and Laboratory Skills (H92G 34) | DNA and Genetics (J2RF 34) | DNA Molecular Techniques (H92A 35) | Microbiological Techniques (J2GM 35) | Immunological Techniques (H92E 35) | Protein Structure and Function (H92J 35) | Math. for Science 1 (H8XP 33) | Math. for Science 2 (H8XR 34) | Statistics for Science 1 (H8XT 33) | Statistics for Science 2 (H8XV 34) |
|---------|---|--|---|--|--|--|----------------------------|------------------------------------|--------------------------------------|------------------------------------|--|-------------------------------|-------------------------------|------------------------------------|------------------------------------|
| H6F2 04 | Maintain Effective and Efficient Working Relationships | X | X | X | X | X | | X | X | X | | | | | |
| H6FC 04 | Preparing Reagents | X | | | X | | | | | | | | | | |
| H6FK 04 | Provide Technical Support for Computer Application Software and Equipment | | | | | | | | | | | | | | |
| H6FN 04 | Provide Technical Advice and Guidance | | | | | | | | | | | | | | |
| H6FP 04 | Prepare New Methods, Resources and Equipment for Learning Activities | | | | | | | | | | | | | | |
| H6FR 04 | Improve the Quality and Reliability of Activities | | | | | | | | | | | | | | |
| H6FV 04 | Amplifying and Analysing DNA or RNA Samples using PCR or qPCR | X | | | | | | X | X | | | | | | |
| H6FW 04 | Analysing Samples using Light Microscopy | X | | X | | X | | | X | | | | | | |
| H6FY 04 | Analysis of DNA using Gel Electrophoresis | X | | | | | | X | | X | | | | | |
| H6G0 04 | Plan and Collect Samples for Testing | | | | | | | | | | | | | | |
| H6G1 04 | Carry out Investigation | X | X | X | X | X | | X | X | X | | | | | |

| Code | National Occupational Standard | Laboratory Skills for Science Industries (H91V 34) | Fundamental Chemistry: Theory and Laboratory Skills (H92X 34) | Cell Biology: Theory and Laboratory Skills (J2RE 34) | Biochemistry: Theory and Laboratory Skills (H922 34) | Microbiology: Theory and Laboratory Skills (H92G 34) | DNA and Genetics (J2RF 34) | DNA Molecular Techniques (H92A 35) | Microbiological Techniques (J2GM 35) | Immunological Techniques (H92E 35) | Protein Structure and Function (H92J 35) | Math. for Science 1 (H8XP 33) | Math. for Science 2 (H8XR 34) | Statistics for Science 1 (H8XT 33) | Statistics for Science 2 (H8XV 34) | |
|---------|--|--|---|--|--|--|----------------------------|------------------------------------|--------------------------------------|------------------------------------|--|-------------------------------|-------------------------------|------------------------------------|------------------------------------|--|
| | | | | | | | | | | | | | | | | |
| H6G2 04 | Analysis of Samples using High Performance Liquid Chromatography | X | | | | | | | | | | | | | | |
| H6G3 04 | Analysis of Samples using Spectroscopy | X | | | | | | | | | | | | | | |
| H6G4 04 | Analysis of Samples using Gas Chromatography | X | X | | | | | | | | | | | | | |
| H6G5 04 | Applying Basic Statistics | | | | | | | | | | | | | | | |
| H6G6 04 | Develop and Provide Training | | | | | | | | | | | | | | | |
| H6G7 04 | Culturing or Fermenting Cells | | | | | | | | | | | | | | | |
| H6G8 04 | Develop and Maintain Health and Safety Procedures | X | | | | | | | | | | | | | | |
| H6G9 04 | Make Presentations in the Work Place | X | | | | | | | | | | | | | | |
| H6GA 04 | Managing Budgets | | | | | | | | | | | | | | | |
| H6GB 04 | Providing Leadership | | | | | | | | | | | | | | | |
| H6GC 04 | Encourage Problem Solving and Innovation | | | | | | | | | | | | | | | |
| H6GD 04 | Establish and Implement Quality Assurance Processes | | | | | | | | | | | | | | | |

5.3 Mapping of Core Skills development opportunities across the qualification

| Unit code | Unit title | Communication | | Numeracy | | ICT | | Problem Solving | | | Working with Others | |
|-----------|---|---------------|------|--------------|-----------------------------|-----------------------|--------------------------------|-------------------|-------------------------|--------------------------|------------------------------------|-------------------------------------|
| | | Written | Oral | Using Number | Using Graphical Information | Accessing Information | Providing/Creating Information | Critical Thinking | Planning and Organising | Reviewing and Evaluating | Working Co-operatively with Others | Reviewing Co-operative Contribution |
| H91V 34 | Laboratory Skills for Science Industries | O | O | S | E | O | S | E | O | S | O | O |
| H91W 34 | Applied Sciences: Graded Unit 1 | S | | | S | | S | E | E | E | | |
| H92X 34 | Fundamental Chemistry: Theory and Laboratory Skills | O | | E | O | O | S | O | O | S | O | O |
| J2RE 34 | Cell Biology: Theory and Laboratory Skills | O | | S | O | O | S | E | O | O | O | O |
| H922 34 | Biochemistry: Theory and Laboratory Skills | O | | S | O | O | S | O | O | S | O | O |
| H92G 34 | Microbiology: Theory and Laboratory Skills | O | | S | | | S | O | O | S | O | O |
| J2RF 34 | DNA and Genetics | O | | S | O | O | S | O | O | O | O | O |
| H92A 35 | DNA Molecular Techniques | O | | S | | | S | O | O | S | O | O |
| J2GM 35 | Microbiological Techniques | O | | S | | | S | E | O | S | O | O |
| H92E 35 | Immunological Techniques | O | | S | | | S | E | O | S | O | O |
| H92J 35 | Protein Structure and Function | O | | S | O | O | S | S | O | O | O | O |
| H91Y 35 | Applied Biological Sciences: Graded Unit 2 | S | | O | S | O | S | E | E | E | | |
| H8XP 33 | Mathematics for Science 1 | | | E | | | | E | O | O | | |
| H8XR 34 | Mathematics for Science 2 | | | E | O | | | E | O | O | | |

| Unit code | Unit title | Communication | | Numeracy | | ICT | | Problem Solving | | | Working with Others | |
|-----------|---|---------------|------|--------------|-----------------------------|-----------------------|--------------------------------|-------------------|-------------------------|--------------------------|------------------------------------|-------------------------------------|
| | | Written | Oral | Using Number | Using Graphical Information | Accessing Information | Providing/Creating Information | Critical Thinking | Planning and Organising | Reviewing and Evaluating | Working Co-operatively with Others | Reviewing Co-operative Contribution |
| H8XT 33 | Statistics for Science 1 | | | O | F | O | O | | O | O | | |
| H8XV 34 | Statistics for Science 2 | | | F | O | O | O | | O | O | | |
| H92C 35 | Human Body Structure and Function | O | | S | O | O | S | O | O | S | O | O |
| H925 35 | Biomedical Pathology | O | O | O | O | O | | O | O | O | O | O |
| H924 35 | Biomedical Investigations | S | O | S | O | O | | S | O | O | O | O |
| H928 35 | Cellular Signalling | O | | O | O | O | | O | O | O | | |
| H92D 35 | Human Metabolism | | | S | O | O | S | F | O | S | | |
| DP4V 35 | Aquatic Ecosystems | O | O | O | O | O | O | O | O | O | O | O |
| DP4X 35 | Terrestrial Ecosystems | O | O | O | O | O | O | O | O | O | O | O |
| DT4X 35 | Environmental Sampling and Analysis | O | | O | O | O | O | O | O | O | O | O |
| H93A 34 | Ecology and Ecosystems | O | | O | O | O | S | O | S | S | S | O |
| H921 35 | Animal Biology | O | | S | O | O | S | O | O | S | O | O |
| H92H 35 | Plant Biology | O | | S | O | O | S | O | O | S | O | O |
| H92V 35 | Environmental Chemistry: Theory and Laboratory Skills | O | | S | | | S | O | O | S | O | O |
| D75X 34 | Information Technology: Applications Software 1 | | | | | E | E | | | | | |
| H920 34 | Animal and Plant Cell Culture: An Introduction | O | | O | | O | S | O | O | S | O | O |
| H91T 34 | Applied Biochemical Techniques | S | S | S | S | O | S | O | O | S | S | S |

| Unit code | Unit title | Communication | | Numeracy | | ICT | | Problem Solving | | | Working with Others | |
|-----------|---|---------------|------|--------------|-----------------------------|-----------------------|--------------------------------|-------------------|-------------------------|--------------------------|------------------------------------|-------------------------------------|
| | | Written | Oral | Using Number | Using Graphical Information | Accessing Information | Providing/Creating Information | Critical Thinking | Planning and Organising | Reviewing and Evaluating | Working Co-operatively with Others | Reviewing Co-operative Contribution |
| H930 35 | Instrumental Techniques 1 | O | | S | O | O | S | E | E | E | O | O |
| H931 35 | Instrumental Techniques 2 | | | O | O | O | O | E | O | O | | |
| DN38 34 | Sustainable Development | S | S | O | O | S | S | O | O | O | S | S |
| H92K 34 | Science Industry: Key Issues | O | O | | | O | O | E | O | O | O | O |
| H926 34 | Biotechnology: An Introduction | O | | O | O | O | S | O | O | S | O | O |
| DV0N 35 | Plan an Environmental Management System | S | S | O | O | S | S | O | O | O | S | S |
| DN36 34 | Earth Science | S | S | O | O | S | S | O | O | O | S | S |
| F2G8 34 | Environmental Awareness | S | S | | | O | | | | | | |
| DF82 34 | Quality and Health & Safety Systems in Science Industries | S | S | | | O | O | O | O | O | S | S |
| H93F 34 | Physics for Life Sciences | O | O | E | O | O | S | E | O | S | O | O |
| H92W 33 | Fundamental Chemistry: An Introduction | O | | E | O | O | S | E | | S | O | O |
| H923 33 | Biology: An Introduction | O | | S | O | O | S | O | O | O | O | O |
| H93D 33 | Physics 1 | O | | E | O | O | S | E | O | S | O | O |
| D77H 34 | Employment Experience 2 | O | | | | O | O | O | O | O | E | E |
| DG6E 34 | Work Role Effectiveness (level 7) | O | O | O | O | O | O | O | O | O | O | O |
| DG6G 35 | Work Role Effectiveness (level 8) | O | O | O | O | O | O | O | O | O | O | O |
| DE3R 34 | Personal Development Planning | O | | | O | O | O | O | O | O | | |

| Unit code | Unit title | Communication | | Numeracy | | ICT | | Problem Solving | | | Working with Others | |
|-----------|------------------------------------|---------------|------|--------------|-----------------------------|-----------------------|--------------------------------|-------------------|-------------------------|--------------------------|------------------------------------|-------------------------------------|
| | | Written | Oral | Using Number | Using Graphical Information | Accessing Information | Providing/Creating Information | Critical Thinking | Planning and Organising | Reviewing and Evaluating | Working Co-operatively with Others | Reviewing Co-operative Contribution |
| H8T2 33 | Workplace Communication in English | E | E | | | S | S | S | S | S | S | S |

Key:

E = Embedded

S = Signposted

O = Opportunities

5.4 Assessment Strategy for the qualification

In the majority of Units, theory based Outcomes are assessed holistically by means of an end of Unit closed-book assessment under controlled conditions. Practical Outcomes are evidenced by a variety of means; please consult individual Unit specifications for clarification and details of arrangements. The Units in the following table are notable exceptions.

| Unit | Assessment |
|---|---|
| Laboratory Skills for Science Industries | <p>Outcome 1: Production of Control of Substances Hazardous to Health (COSHH) and risk assessments</p> <p>Outcome 2: Practical activities and laboratory diaries/proformas</p> <p>Outcome 3: Evidence of presenting and analysing scientific information</p> <p>Outcome 4: Production of laboratory reports/poster/presentation</p> |
| Applied Sciences: Graded Unit 1 | Assessed by the use of a scientific report. The investigation brief should provide the learner with the opportunity to produce evidence that demonstrates that they have met the aims of the Group Award. |
| Personal Development Planning | Assessed holistically by means of a personal development portfolio. |
| Employment Experience 2 | Assessed holistically by means of a portfolio of evidence generated at the learner's place of work. Evidence will be produced by the learner during routine tasks but will also include reflective statements of their experience and supporting witness testimony to support the learner performance. |
| Quality and Health & Safety Systems in Science Industries | <p>Outcome 1: Assessment on key aspects of health and safety procedures in relation to science</p> <p>Outcome 2: Assignment on an industrial quality system</p> <p>Outcome 3: Industrial visit and associated report on quality and health and safety systems</p> |
| Applied Biological Sciences: Graded Unit 2 | Assessed by the undertaking of a laboratory based project and production of associated scientific report. The investigation brief should provide the learner with the opportunity to produce evidence that demonstrates that they have met the aims of the Group Award. |
| Work Role Effectiveness | Evidence for the Unit will include self-appraisal materials generated by the learner. This will be confirmed or amended by employer comment (or report) and assessed in a professional interview by the assessor for this Unit. |
| Workplace Communication in English | <p>Outcome 1: Summarising and evaluating a written business text which combines factual content and analysis</p> <p>Outcome 2: Producing a folio of at least three vocationally relevant documents which present and examine information and ideas</p> <p>Outcome 3: Taking part in sustained spoken communication which has a clear remit involving a complex vocational issue</p> |
| Aquatic Ecosystems | <p>Outcomes 1 and 2: Closed-book assessment</p> <p>Outcome 3: Practical investigation which can be completed as a group project</p> |

| Unit | Assessment |
|---|---|
| Terrestrial Ecosystems | Outcomes 1 and 2: Closed-book assessment Outcome 3: Practical investigation which can be completed as a group project |
| Biomedical Pathology | Requires learners to analyse and answer questions based on two case studies. |
| Plan an Environmental Management System | All Outcomes assessed by a single holistic assessment in the form of a case study based on the environmental management of an organisation. |
| Biotechnology: An Introduction | Outcomes 1-4: Closed-book assessment Outcome 5: Debate or presentation |
| Earth Science | Outcome 1: Report produced under open-book conditions Outcomes 2 and 3: Learners produce a descriptive commentary of their findings of a field trip |
| Sustainable Development | Outcome 1: Open-book report Outcome 2: Portfolio of evidence plus report to evaluate best practice in promoting sustainable development |
| Environmental Awareness | Outcomes 1-3 can be assessed by production of a single report which includes a personal action plan of the connection between a learner's lifestyle and environmental issues. |

6 Guidance on approaches to delivery and assessment

6.1 Sequencing/integration of Units

The structure of the HND Applied Biological Sciences Group Award allows a high degree of flexibility in the mode of delivery. The Group Award can be offered on a full-time, part-time, day-release, block-release basis, or as an evening mode of study. A distance learning delivery mode is possible provided adequate materials, tutorial support, assessment facilities and laboratory time exist. Centres should note however that assessed practical activities must take place under supervised conditions. Combination of delivery modes is also a possibility. Such combined modes of study may enable learners to complete the Group Award in a shorter time period.

Centres will define which order the Units are undertaken based on learner recruitment patterns, mode of delivery, resource implications, and logical progression dictated by topic and content. This is especially true where centres deliver a 'themed' HND Applied Biological Sciences Group Award, eg Biomedical or Whole Organism Biology. In these instances it is critical that the specific two year programme of delivery is resourced and sequenced to ensure progression routes remain intact and learners are not disadvantaged by integration of work within non-mandatory Units.

The Group Award lends itself to a wide range of delivery mechanisms including formal teaching, case studies, group work, tutorial, laboratory/practical work, field work and demonstration/coaching opportunities. A number of Units specifically indicate some of these approaches are to be utilised in assessment therefore it is important that learners have experienced them throughout the learning process.

The inclusion of SCQF level 6 Units in chemistry, biology and physics within the new HND Applied Biological Sciences Group Award provides an opportunity to support learners who have limited prior knowledge of a particular science. The opportunity to undertake one of these Units should be sequenced at an early stage of delivery.

The *Laboratory Skills for Science Industries* Unit could be integrated and evidence generated from Units throughout the Group Award. It is important to note that the *Laboratory Skills for Science Industries* Unit has been designed so as to give learners the laboratory time necessary to develop essential practical skills, prior to assessment of set practical activities.

It is expected that the *Applied Sciences: Graded Unit 1* would be undertaken in the first year of the (full-time) programme, and should use knowledge gained from the mandatory Units of this Group Award.

It is expected that the *Applied Biological Sciences: Graded Unit 2* would be undertaken in the second year of the (full-time) programme and should use knowledge gained from the mandatory Units of this Group Award. Learners should have attained a high level of practical skills and experience before undertaking the *Applied Biological Sciences: Graded Unit 2*.

6.1.1 Delivery Schedule

There are many driving forces which determine a full-time delivery programme for any Group Award including accommodation, staff availability, materials and equipment.

It is anticipated that learners will most likely either wish to undertake a biomedical science programme (ie those Units in Section A of the framework) or a whole organism programme (ie those Units in Section B of the framework). In both cases appropriate Units from Sections C, D and E make up the necessary credits for the Group Award.

The following table indicates a suggested delivery programme of Units for a two year full-time delivery programme operating on a three block delivery system, using the biomedical science route as the example.

| HND Applied Biological Sciences | | |
|--|---|--|
| Suggested Delivery for a full-time two year programme | | |
| Year 1: Teaching Block 1 | Year 1: Teaching Block 2 | Year 1: Teaching Block 3 |
| Laboratory Skills for Science Industries | | Applied Biochemical Techniques |
| Statistics for Science 1 | Microbiology: Theory & Laboratory Skills | |
| Fundamental Chemistry: An Introduction | Fundamental Chemistry: Theory and Laboratory Skills | |
| Cell Biology: Theory and Laboratory Skills | DNA and Genetics | Biochemistry: Theory and Laboratory Skills |
| Human Body Structure and Function | | Applied Sciences: Graded Unit 1 |

| HND Applied Biological Sciences (cont) | | |
|---|--|--|
| Suggested Delivery for a full-time two year programme | | |
| Year 2: Teaching Block 1 | Year 2: Teaching Block 2 | Year 2: Teaching Block 3 |
| Cellular Signaling | Human Metabolism | |
| Protein Structure and Function | DNA Molecular Techniques | |
| Microbiological Techniques | | Animal & Plant Cell Culture: An Introduction |
| Biomedical Pathology | Biomedical Investigations | Immunological Techniques |
| Statistics for Science 2 | Applied Biological Sciences: Graded Unit 2 | |

6.2 Recognition of Prior Learning

SQA recognises that learners gain knowledge and skills acquired through formal, non-formal and informal learning contexts.

In some instances, a full Group Award may be achieved through the recognition of prior learning. However, it is unlikely that a learner would have the appropriate prior learning and experience to meet all the requirements of a full Group Award.

The recognition of prior learning may **not** be used as a method of assessing in the following types of Units and assessments:

- ◆ HN Graded Units
- ◆ Course and/or external assessments
- ◆ Other integrative assessment Units (which may or not be graded)
- ◆ Certain types of assessment instruments where the standard may be compromised by not using the same assessment method outlined in the Unit
- ◆ Where there is an existing requirement for a licence to practice
- ◆ Where there are specific health and safety requirements
- ◆ Where there are regulatory, professional or other statutory requirements
- ◆ Where otherwise specified in an Assessment Strategy

More information and guidance on the *Recognition of Prior Learning* (RPL) may be found on our website www.sqa.org.uk.

The following sub-sections outline how existing SQA Unit(s) may contribute to this Group Award. Additionally, they also outline how this Group Award may be recognised for professional and articulation purposes.

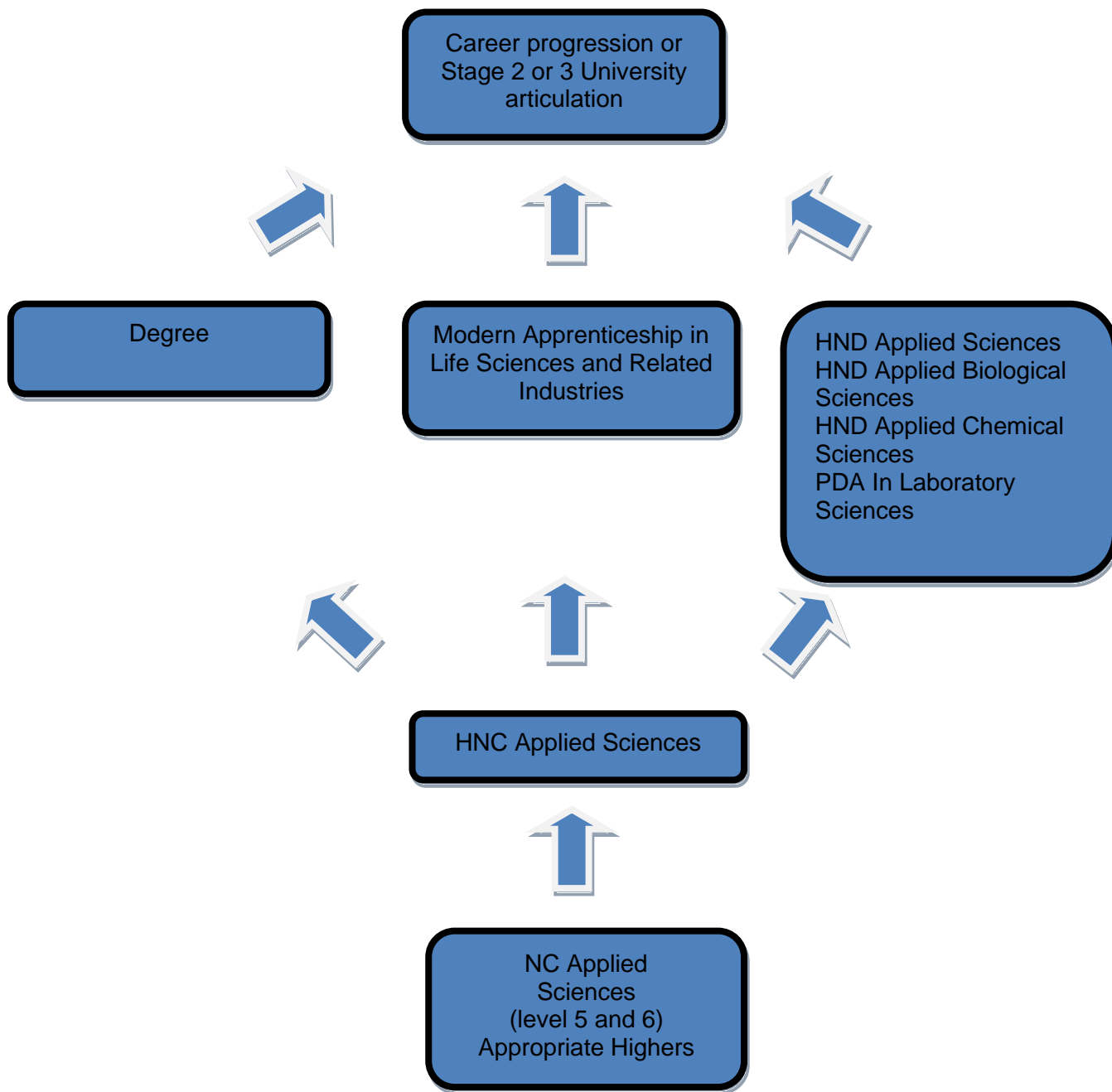
6.2.1 Articulation and/or progression

The HND Applied Biological Sciences Group Award is designed to allow progression from the HNC Applied Sciences Group Award (if 15 credits are attained) into the second year of the HND Applied Biological Sciences Group Award.

The HND Applied Biological Sciences Group Award also allows progression direct to Year 3 at higher educational institutions. Centres are advised to work in partnership with higher educational institutions to ensure that relevant options for progression are achieved.

The HND Applied Biological Sciences Group Award forms an integral part of the Technical Apprenticeship in Life Sciences and Related Industries at SCQF level 8, providing the knowledge and understanding and basic skills required to allow the development of vocational skills in the work place. Learners on this route will normally attend college on a day-release or block-release basis.

The diagram following illustrates potential progression routes:



6.2.2 Transitional Arrangements

It is recommended that learners who are in the process of completing the predecessor Group Award finish it rather than switching to the new Group Award. However, there may be occasions when it is not possible for learners to complete the existing Group Award, eg where they were unable to complete their studies due to ill health or difficulties with funding or employment and where the centre has progressed to offer the new Group Award and only one or two Units need to be completed. In these cases it is recommended that the following suggested credit transfer arrangements be considered.

6.2.3 Credit transfer

| New Unit Code | New Unit Title | Old Unit Code | Old Unit Title | Direct Credit Transfer | Elements of Credit Transfer |
|---------------|---|---------------|---|------------------------|--|
| H91V 34 | Laboratory Skills for Science Industries | N/A | | No | Pass of Unit DF82 34 credits Outcome 1 Pass of Unit DG70 34 credits Outcome 4 |
| H91W 34 | Applied Sciences: Graded Unit 1 | DJ89 34 | Applied Sciences: Graded Unit 1 | Yes | |
| H92X 34 | Fundamental Chemistry: Theory and Laboratory Skills | DH2K 34 | Fundamental Chemistry: Theory and Practice | Yes | |
| H927 34 | Cell Biology: Theory and Laboratory Skills | DJ1K 34 | Cell Biology: Theory and Practice | No | Pass of Unit DJ1K 34 credits Outcomes 1, 3 and 4 |
| H922 34 | Biochemistry: Theory and Laboratory Skills | DH2J 34 | Biochemistry: Theory and Practice | Yes | |
| H92G 34 | Microbiology: Theory and Laboratory Skills | DH55 34 | Microbiology: Theory and Practice | Yes | |
| H929 34 | DNA and Genetics | DJ6Y 34 | DNA Structure and Function | No | Both Units, DJ6Y 34 and DP4P 34, required for credit transfer |
| | | DP4P 34 | Genetics | | |
| H92A 35 | DNA Molecular Techniques | DJ6X 35 | DNA Molecular Techniques: Theory and Practice | No | |
| J2GM 35 | Microbiological Techniques | DH2P 35 | Microbiological Techniques: Theory and Practice | Yes | |
| H92E 35 | Immunological Techniques | DH2L 35 | Immunological Techniques: Theory and Practice | No | Both Units, DH2L 35 and DH2M 35 required for credit transfer |
| | | DH2M 35 | Immunotechnology: Theory and Practice | | |

| New Unit Code | New Unit Title | Old Unit Code | Old Unit Title | Direct Credit Transfer | Elements of Credit Transfer |
|---------------|--|---------------|--|------------------------|-----------------------------------|
| H92J 35 | Protein Structure and Function | DG6X 35 | Protein Structure and Function | Yes | |
| H91Y 35 | Applied Biological Sciences: Graded Unit 2 | DP50 35 | Applied Biological Sciences: Graded Unit 2 | Yes | |
| H8XP 33 | Mathematics for Science 1 | DN8D 33 | Mathematics for Science 1 | No | Pass of DN8D 33 credits Outcome 1 |
| H8XR 34 | Mathematics for Science 2 | DV9V 34 | Mathematics for Science 2 | No | Pass of DV9V 34 credits Outcome 1 |
| H8XT 33 | Statistics for Science 1 | DN8C 34 | Statistics for Science 1 | Yes | |
| H8XV 34 | Statistics for Science 2 | DV08 35 | Statistics for Science 2 | Yes | |
| H92C 35 | Human Body Structure and Function | DG71 35 | Human Body Structure and Function | Yes | |
| H925 35 | Biomedical Pathology | DN35 35 | Biomedical Pathology | Yes | |
| H924 35 | Biomedical Investigations | DP4R 35 | Biomedical Investigations | Yes | |
| H928 35 | Cellular Signalling | DP4T 35 | Cellular Signalling | Yes | |
| H92D 35 | Human Metabolism | DN39 35 | Human Metabolism | Yes | |
| DP4V 35 | Aquatic Ecosystems | DP4V 35 | Aquatic Ecosystems | Yes | |
| DP4X 35 | Terrestrial Ecosystems | DP4X 35 | Terrestrial Ecosystems | Yes | |
| DT4X 35 | Environmental Sampling and Analysis | DT4X 35 | Environmental Sampling and Analysis | Yes | |

| New Unit Code | New Unit Title | Old Unit Code | Old Unit Title | Direct Credit Transfer | Elements of Credit Transfer |
|----------------------|---|----------------------|---|-------------------------------|--|
| H93A 34 | Ecology and Ecosystems | DN37 34 | Ecology and Ecosystems | Yes | |
| H921 35 | Animal Biology | DP4L 34 | Animal Biology | Yes | |
| H92H 35 | Plant Biology | DP4M 34 | Plant Biology | Yes | |
| H92V 35 | Environmental Chemistry: Theory and Laboratory Skills | DP4Y 34 | Environmental Chemistry | Yes | |
| DN38 34 | Sustainable Development | DN38 34 | Sustainable Development | Yes | |
| D75X 34 | Information Technology: Applications Software 1 | D75X 34 | Information Technology: Applications Software 1 | Yes | |
| H920 34 | Animal and Plant Cell Culture: An Introduction | DH2H 34 | Animal and Plant Cell Culture: An Introduction | Yes | |
| H91T 34 | Applied Biochemical Techniques | DG6Y 34 | Applied Biochemical Techniques | No | Pass of Unit DG6Y 34 credits Outcomes 2, 3 and 4 |
| H930 35 | Instrumental Techniques 1 | DH54 35 | Instrumental Techniques: Theory and Practice 1 | Yes | |
| H931 35 | Instrumental Techniques 2 | DH2N 35 | Instrumental Techniques: Theory and Practice 2 | Yes | |
| H92K 34 | Science Industry: Key Issues | DP9M 34 | Science Industry: Key Issues | Yes | |
| H926 34 | Biotechnology: An Introduction | DJ00 34 | Biotechnology: An Introduction | No | |

| New Unit Code | New Unit Title | Old Unit Code | Old Unit Title | Direct Credit Transfer | Elements of Credit Transfer |
|---------------|---|---------------|---|------------------------|-----------------------------|
| DV0N 35 | Plan an Environmental Management System | DV0N 35 | Plan an Environmental Management System | Yes | |
| DN36 34 | Earth Science | DN36 34 | Earth Science | Yes | |
| F2G8 34 | Environmental Awareness | F2G8 34 | Environmental Awareness | Yes | |
| DF82 34 | Quality and Health & Safety Systems in Science Industries | DF82 34 | Quality and Health & Safety Systems in Science Industries | Yes | |
| H93F 34 | Physics for Life Sciences | N/A | | No | |
| H92W 33 | Fundamental Chemistry: An Introduction | DX29 33 | Fundamental Chemistry: An Introduction | Yes | |
| H923 33 | Biology: An Introduction | N/A | | No | |
| H93D 33 | Physics 1 | DN33 33 | Physics 1 | Yes | |
| D77H 34 | Employment Experience 2 | D77H 34 | Employment Experience 2 | Yes | |
| DG6E 34 | Work Role Effectiveness | DG6E 34 | Work Role Effectiveness (2003) | Yes | |
| DG6G 35 | Work Role Effectiveness | DG6G 35 | Work Role Effectiveness (2003) | Yes | |
| DE3R 34 | Personal Development Planning | DE3R 34 | Personal Development Planning | Yes | |
| H8T2 33 | Workplace Communication in English | H8T2 33 | Workplace Communication in English | Yes | |

6.3 Opportunities for e-assessment

E-assessment may be appropriate for some assessments in the Units comprising this Group Award. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

6.4 Support materials

A list of existing ASPs is available to view on SQA's website.

Understanding Standards documents will be produced for the following Units:

| Unit code | Unit title |
|-----------|--|
| H91W 34 | Applied Sciences: Graded Unit 1 |
| H91Y 35 | Applied Biological Sciences: Graded Unit 2 |
| H91V 34 | Laboratory Skills for Science Industries |

6.5 Resource requirements

Delivering centres will require appropriate science teaching laboratories and technical support as well as appropriate laboratory resources to support the delivery of the practical elements of the HND Applied Biological Sciences Group Award.

Centres will require to ensure that specific requirements in terms of documents, texts and IT resources to support the learning processes within the HND Applied Biological Sciences Group Award are met.

All staff delivering the HND Applied Biological Sciences Group Award will require to hold a qualification appropriate to the Unit(s) delivered.

7 General information for centres

Equality and inclusion

The Unit specifications making up this Group Award have been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners will be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

Internal and external verification

All instruments of assessment used within this qualification should be internally verified, using the appropriate policy within the centre and the guidelines set by SQA.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for this qualification.

Further information on internal and external verification can be found in *SQA's Guide to Assessment* www.sqa.org.uk/GuideToAssessment.

8 Glossary of terms

Embedded Core Skills: Where the assessment evidence for the Unit also includes full evidence for a complete Core Skill or Core Skill components. A learner successfully completing the Unit will be automatically certificated for the Core Skill. (This depends on the Unit having been successfully audited and validated for Core Skills certification.)

Finish date: The end of a Group Award's lapsing period is known as the finish date. After the finish date, the Group Award will no longer be live and the following applies:

- ◆ learners may not be entered for the Group Award
- ◆ the Group Award will continue to exist only as an archive record on the Awards Processing System (APS)

Graded Unit: Graded Units assess learners' ability to integrate what they have learned while working towards the Units of the Group Award. Their purpose is to add value to the Group Award, making it more than the sum of its parts, and to encourage learners to retain and adapt their skills and knowledge.

Lapsing date: When a Group Award is entered into its lapsing period, the following will apply:

- ◆ the Group Award will be deleted from the relevant catalogue
- ◆ the Group Award specification will remain until the qualification reaches its finish date, at which point it will be removed from SQA's website and archived
- ◆ no new centres may be approved to offer the Group Award
- ◆ centres should only enter learners whom they expect to complete the Group Award during the defined lapsing period

SQA credit value: The credit value allocated to a Unit gives an indication of the contribution the Unit makes to an SQA Group Award. An SQA credit value of 1 given to an SQA Unit represents approximately 40 hours of programmed learning, teaching and assessment.

SCQF: The Scottish Credit and Qualification Framework (SCQF) provides the national common framework for describing all relevant programmes of learning and qualifications in Scotland. SCQF terminology is used throughout this guide to refer to credits and levels. For further information on the SCQF visit the SCQF website at www.scqf.org.uk.

SCQF credit points: SCQF credit points provide a means of describing and comparing the amount of learning that is required to complete a qualification at a given level of the Framework. One National Unit credit is equivalent to 6 SCQF credit points. One National Unit credit at Advanced Higher and one Higher National Unit credit (irrespective of level) is equivalent to 8 SCQF credit points.

SCQF levels: The level a qualification is assigned within the framework is an indication of how hard it is to achieve. The SCQF covers 12 levels of learning. HNCs and HNDs are available at SCQF levels 7 and 8 respectively. Higher National Units will normally be at levels 6–9 and Graded Units will be at level 7 and 8. National Qualification Group Awards are available at SCQF levels 2–6 and will normally be made up of National Units which are available from SCQF levels 2–7.

Subject Unit: Subject Units contain vocational/subject content and are designed to test a specific set of knowledge and skills.

Signposted Core Skills: Refers to opportunities to develop Core Skills where these arise in learning and teaching but are not automatically certificated.

9 General information for learners

This section will help you decide whether this is the qualification for you by explaining what the qualification is about, what you should know or be able to do before you start, what you will need to do during the qualification and opportunities for further learning and employment.

The HND Applied Biological Sciences Group Award is a vocational qualification providing the knowledge and skills required to allow for progression to further study at degree level and employment in science-based industries.

The aims of the HND Applied Biological Sciences Group Award are designed to:

- ◆ prepare you for an appropriate level of employment, in science areas such as research and industrial laboratories; biotechnology, microbiological, pharmaceutical, environmental, and the NHS.
- ◆ develop a range of contemporary vocational skills relating to the use, support and development of systems appropriate to employment at technician or professional level.
- ◆ provide you with a range of skills to support learning in relevant SVQ 4 level programmes.
- ◆ provide you with an element of vocational specialisation in a variety of areas such as environmental analysis, biomedical investigations, microbiology, animal biology, plant biology, and biotechnology.
- ◆ prepare you for progression to further studies in science related disciplines, including direct entry to Stage 3 degree programmes.
- ◆ provide a flexible route to the Group Award, allowing access to those in employment through part-time study and full-time provision.
- ◆ develop study and research skills.
- ◆ develop Core Skills such as working with others in a team environment and communication skills through the use of report writing and working in a laboratory environment.

9.1 Course Content

The HND Applied Biological Sciences Group Award is an SCQF level 8 qualification which contains 30 credits (240 SCQF credit points). In order to achieve the HND Applied Biological Sciences Group Award, you must achieve 30 credits as follows:

| Section | Credits required | Notes |
|----------------------------|---|---|
| Mandatory optional section | 2 credits must be achieved. | A further 2 credits could be achieved from this section, resulting in a total of 4 credits |
| Optional sections | 8–10 credits must be achieved, depending on the choice of Units in the above section. | Maximum of 7 credits from Section A Maximum of 7 credits from Section B Maximum of 1 credit from Section D Maximum of 4 credits from Section E |

It is recommended that all learners be given a copy of the Group Award structure from Section 2 with clarification and explanation as appropriate. You should liaise with your lecturer to ensure that you complete the necessary Units to achieve the Group Award itself but also that progression routes remain open to you.

The majority of the Units have theory and practical Outcomes. To pass the theory Outcomes you will be required to pass an end of Unit test. To pass a practical Outcome you will be expected to perform a range of laboratory experiments to a required standard, and to produce a report/pro forma on the experiment.

As well as undertaking assessments for all Units, you will also be required to undertake a one credit Graded Unit at SCQF level 7 and a two credit Graded Unit at SCQF level 8. The *Applied Sciences: Graded Unit 1* at SCQF level 7 will take the form of an investigation report, and the *Applied Biological Sciences: Graded Unit 2* will take the form of a laboratory based project with an associated investigation report.

The purpose of the Graded Units is to assess your ability to integrate and apply the knowledge and skills that you will have gained during your period of study. On successful completion of each Graded Unit you will be awarded a Grade of A, B or C according to the mark attained. This grading applies only to the relevant Graded Unit and not the overall HND Applied Biological Sciences Group Award.

It may be possible to study for the HND Applied Biological Sciences Group Award on a part-time basis.

Progression opportunities to and from the HND Applied Biological Sciences Group Award are illustrated in the diagram following:

