Group Award Specification for:

National Progression Award (NPA) in Scientific Technologies at SCQF level 6

Group Award Code: GN13 46

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Contents

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 NPA in Scientific Technologies.

The NPA Scientific Technologies group award was specifically developed as part of the Foundation Apprenticeship in Scientific Technologies at SCQF level 6. Skills Development Scotland, alongside other partners, is working with industry to increase the range of work based learning opportunities for learners in the senior phase of secondary schools. One of the ways this is being achieved is through the development of Foundation Apprenticeships and Skills Development Scotland is leading this initiative. Foundation Apprenticeships will allow learners to gain vocational qualifications that combine sector specific skills alongside the knowledge that underpins these skills in a workplace setting while still at school.

The group award title reflects the scientific nature of the award and is linked to the skills required to become competent to work in science-based industries. Learners for the NPA Scientific Technologies group award will be able to work in a broad range of companies; hence the title of the award is generic enough to reflect the diversity of the science industry in Scotland.

A Qualification Design Team (QDT) was created to support the development process in consultation with employers, further education partners, higher education colleagues and key stakeholder groups from industry. 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 entry to employment while at the same time allowing articulation to further study. 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 NPA Scientific Technologies group award is designed for both full and part-time learners and the target audience is those who wish to progress to further study 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 NPA Scientific Technologies group award aims to provide underpinning knowledge to support the level 2 SVQ in Laboratory and Associated Technical Activities (Industrial Science), and the NPA Scientific Technologies group award is embedded in the Foundation Apprenticeship in Scientific Technologies at SCQF level 6.

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 study, and may be seen to be supporting the national strategies and drivers as outlined below.

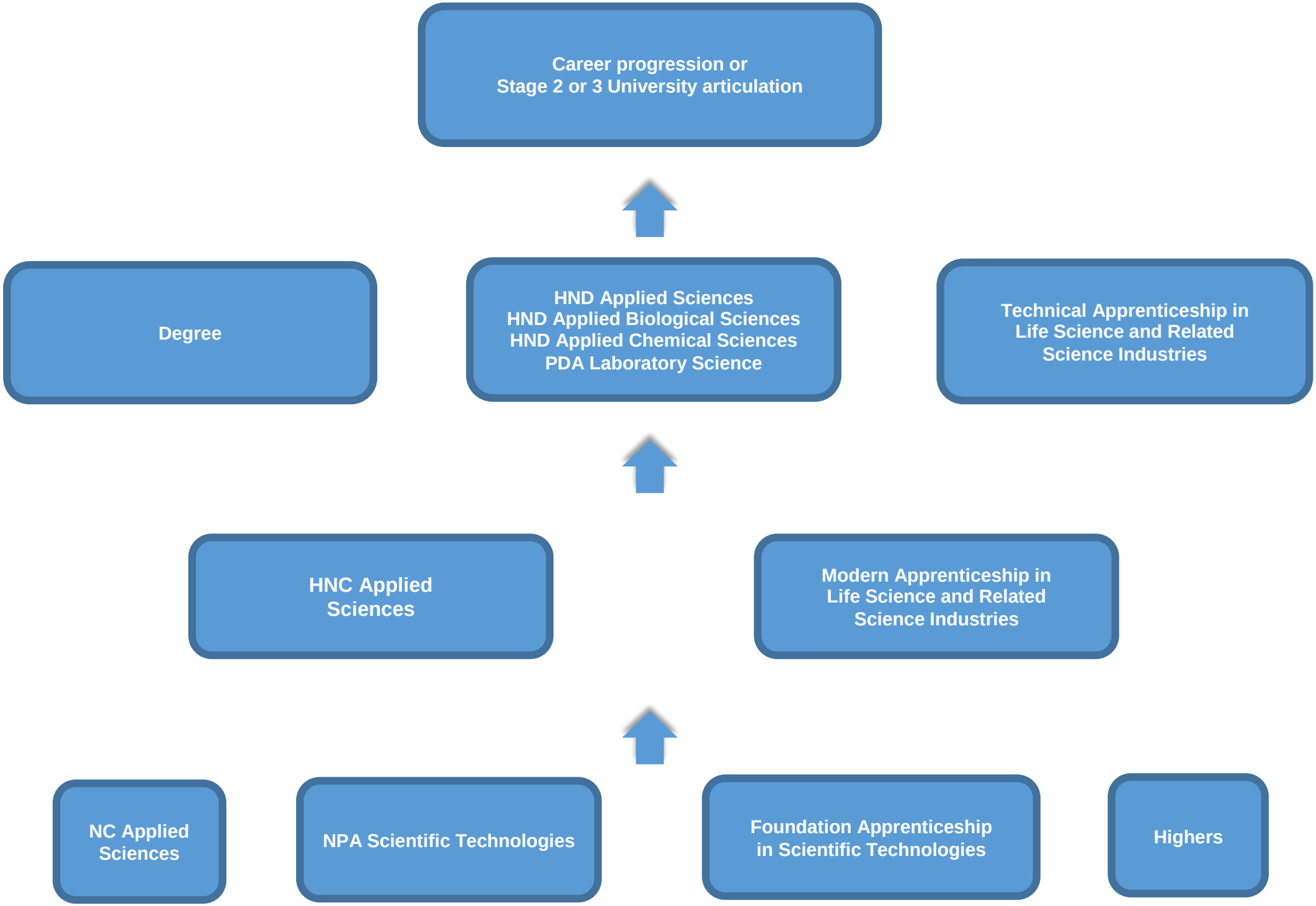
The Scottish Life Sciences Strategy states that 'the Life Sciences industry in Scotland is recognised by both UK and Scottish Governments as one with high growth potential and the capacity to contribute significantly to the nation's productivity. Scotland hosts the UK's second largest Life Sciences cluster 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 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 Scottish Government's Developing the Young Workforce — Scotland's Youth Employment strategy states that 'our objective is a world-class system of vocational education, in which colleges work with schools and employers to deliver learning that is directly relevant to getting a job, as a mainstream option for all pupils in the senior phase of secondary school', and that 'what is on offer is relevant to labour market needs and addresses the needs of science, technology, engineering and mathematics (STEM)'.

The development of the group award has taken 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 or employment in science-based industries.

The interrelationship of the NPA Scientific Technologies group award with other qualifications is illustrated in the diagram following:


Career progression or
Stage 2 or 3 University articulation
Degree
HND Applied Sciences
HND Applied Biological Sciences
HND Applied Chemical Sciences
PDA Laboratory Science
Technical Apprenticeship in Life Science and Related Science Industries
HNC Applied Sciences
Modern Apprenticeship in Life Science and Related Science Industries
NC Applied Sciences
NPA Scientific Technologies
Foundation Apprenticeship in Scientific Technologies
Highers

2 Qualification structure

This group award is made up of 24 SCQF credit points (4 SQA unit credits). All units are mandatory.

Mandatory units (4 credits)

Code	Unit title	SCQF level	SCQF credit points	SQA credit
F3TD 11	Laboratory Safety	5	6	1
HP9W 45	Mathematics for Science 2	5	6	1
HT6V 46	Fundamental Chemistry: An Introduction	6	6	1
HN8D 46	Experimental Procedures: Science	6	6	1

3 Aims of the qualification

The overall aim of the NPA Scientific Technologies group award is to provide a progressive, integrated and coherent education which will be responsive to the needs of learners and employers.

3.1 General aims of the qualification

The general aims of the NPA Scientific Technologies group award are to develop:

- knowledge and understanding of scientific technologies to SCQF level 6.
- the ability to define and solve problems.
- transferable skills.
- the 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.

3.2 Specific aims of the qualification

The aims of the NPA Scientific Technologies group award specify the knowledge and skills required in order to be deemed competent in this subject/occupational area.

The specific aims of the NPA Scientific Technologies group award are to:

- prepare learners for an appropriate level of employment in science areas such as; biological, biotechnology, chemical, environmental, food and drink, medical, oil and gas, pharmaceutical and renewable energy industries.
- develop a range of contemporary vocational skills relating to the use, support and development of systems appropriate to employment at laboratory assistant or laboratory technician level.
- provide learners with a range of skills to support learning in relevant SVQ 2 level programmes.
- prepare learners for progression to further studies in science related disciplines.
- provide a flexible route to the group award, allowing access to those in employment through part-time study and full-time provision.
- provide learners with a wide range of practical laboratory skills to further enhance job prospects through the practical content of the course.
- provide learners with a working knowledge of safety and security procedures in a laboratory setting.
- increase the number of learners interested in and qualified for a career in the sciences.

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 Qualification 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 one science qualification at Grade C or above at SCQF level 5, with appropriate supporting qualifications at SCQF level 5.
- Qualifications in appropriate science and mathematics programmes, such as Access programmes. Learners should have gained some science units at SCQF level 5, and some mathematics units at SCQF level 4.

It is intended that admission to the NPA Scientific Technologies 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 NPA Scientific Technologies group award.

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 4	Analysis and reports.
Numeracy	SCQF level 5	Numerical and graphical presentation, numerical and algebraic calculations.
Information and Communication Technology (ICT)	SCQF level 4	Creation of graphical and narrative material for report 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. In addition, significant opportunities exist for learners to develop the more generic skill, 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
F3TD 11	Laboratory Safety	X	X	X	X	X	X	X	X	X	X
HP9W 45	Mathematics for Science 2	X	X	X		X	X		X	X	X
HT6V 46	Fundamental Chemistry: An Introduction	X	X	X	X	X	X	X	X	X	X
HN8D 46	Experimental Procedures: Science	X	X	X	X	X	X	X	X	X	X

5.2 Mapping of National Occupational Standards (NOS)

The NPA Scientific Technologies group award has been mapped against the level 2 SVQ in Laboratory and Associated Technical Activities (Industrial Science).

Code	National Occupational Standard	Laboratory Safety (F3TD 11)	Mathematics for Science 2 (HP9W 45)	Fundamental Chemistry: An Introduction (HT6V 46)	Experimental Procedures: Science (HN8D 46)
FY9W 04	Follow Health and Safety Procedures for Scientific or Technical Activities	X		X	X
H00A 04	Maintain Effective and Efficient Working Relationships for Scientific or Technical Activities	X		X	X
H00B 04	Use Information Recording Systems for Scientific or Technical Activities				
H00C 04	Carry Out Simple Scientific or Technical Tests Using Manual Equipment	X		X	X
H00D 04	Carry Out Simple Scientific or Technical Tests Using Automated Equipment				
H00E 04	Prepare Scientific or Technical Samples for Testing Activities	X		X	X
H00F 04	Carry Out Sampling Operations for Scientific or Technical Tests	X		X	X
H00G 04	Carry Out Routine Maintenance, Cleaning and Checking of Scientific or Technical Equipment				
H00H 04	Maintain Stocks of Resources, Equipment and Consumables for Scientific or Technical Use				
H00J 04	Prepare Compounds and Solutions for Scientific or Technical Use	X		X	X
F7XY 04	Following Aseptic Procedures in the Laboratory Environment				

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
F3TD 11	Laboratory Safety							S		S		
HP9W 45	Mathematics for Science 2			E	E			E				
HT6V 46	Fundamental Chemistry: An Introduction			S			S			S		
HN8D 46	Experimental Procedures: Science			E	E	S	S	E	E	E	S	

Key:

E = Embedded
S = Signposted

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.

6 Guidance on approaches to delivery and assessment

6.1 Sequencing/integration of units

The NPA Scientific Technologies group award is part of the Foundation Apprenticeship in Scientific Technologies at SQCF level 6 and is aimed at learners in S5 and S6 who are interested in working in science-based industries but is also suitable for a wider range of learners.

If undertaking the NPA Scientific Technologies group award as part of the Foundation Apprenticeship, it is expected that learners will complete the NPA Scientific Technologies group award in S5.

The structure of the NPA Scientific Technologies 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.

The group award lends itself to a wide range of delivery mechanisms including formal teaching, case studies, group work, tutorial, laboratory/practical 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.

6.1.1 Delivery schedule

There are many driving forces which determine a part-time delivery programme for any group award including accommodation, staff availability, materials and equipment.

The following table indicates a suggested delivery programme for a one year part-time delivery programme operating on a two block delivery system.

National Progression Award in Scientific Technologies	
Teaching block 1	**Teaching block 2**
Fundamental Chemistry: An Introduction	Mathematics for Science 2
Laboratory Safety	Experimental Procedures: Science

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**.

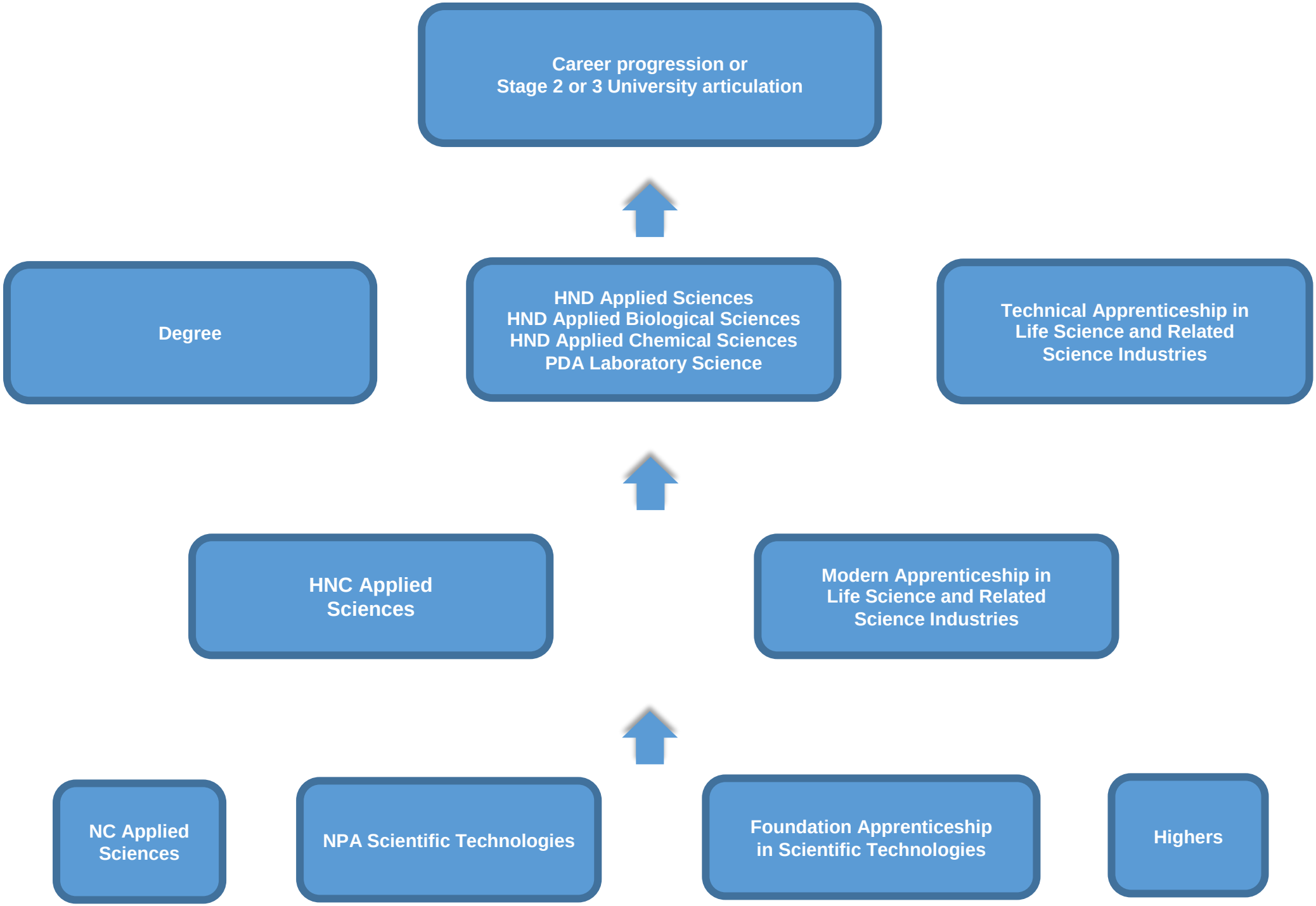
The following sub-sections outline how existing SQA unit(s) may contribute to this group award. Additionally, they also outline how this group award may be recognised for professional and articulation purposes.

6.2.1 Articulation and/or progression

The NPA Scientific Technologies group award is designed to articulate with the HNC Applied Sciences group award and the Modern Apprenticeship in Life Science and Related Science Industries.

The NPA Scientific Technologies group award forms an integral part of the Foundation Apprenticeship in Scientific Technologies at SCQF level 6, providing the knowledge and understanding and basic skills required to allow the development of vocational skills in the work place.

The diagram following illustrates potential progression routes:


Career progression or
Stage 2 or 3 University articulation
Degree
HND Applied Sciences
HND Applied Biological Sciences
HND Applied Chemical Sciences
PDA Laboratory Science
Technical Apprenticeship in Life Science and Related Science Industries
HNC Applied Sciences
Modern Apprenticeship in Life Science and Related Science Industries
NC Applied Sciences
NPA Scientific Technologies
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6.2.2 Credit transfer

New unit code	New unit title	Old unit code	Old unit title	Direct credit transfer
F3TD 11	Laboratory Safety	N/A		
HP9W 45	Mathematics for Science 2	F3T8 11	Mathematics for Science	Yes
HT6V 46	Fundamental Chemistry: An Introduction	N/A		
HN8D 46	Experimental Procedures: Science	D937 12	Experimental Procedures: Science	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.

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 NPA Scientific Technologies 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 NPA Scientific Technologies group award are met.

All staff delivering the NPA Scientific Technologies 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 assessments 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 these qualifications.

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: is where the assessment evidence for the unit also includes full evidence for 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)

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 arise in learning and teaching but are not automatically certificated.

History of changes

It is anticipated that changes will take place during the life of the qualification and this section will record these changes. This document is the latest version and incorporates the changes summarised below. Centres are advised to check SQA's APS Navigator to confirm they are using the up to date qualification structure.

NOTE: Where a unit is revised by another unit:

- No new centres may be approved to offer the unit which has been revised.
- Centres should only enter learners for the unit which has been revised where they are expected to complete the unit before its finish date.

Version Number	Description	Date

Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of this qualification.

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 NPA Scientific Technologies group award is part of the Foundation Apprenticeship in Scientific Technologies at SCQF level 6. The NPA Scientific Technologies group award is a vocational qualification providing the knowledge and skills required to allow for progression to further study and employment in science-based industries.

The aims of the NPA Scientific Technologies group award are designed to:

- prepare you for an appropriate level of employment in science areas such as; biological, biotechnology, chemical, environmental, food and drink, medical, oil and gas, pharmaceutical and renewable energy industries.
- develop a range of contemporary vocational skills relating to the use, support and development of systems appropriate to employment at laboratory assistant or laboratory technician level.
- provide you with a range of skills to support learning in relevant SVQ 2 level programmes.
- prepare you for progression to further studies in science related disciplines.
- provide a flexible route to the group award, allowing access to those in employment through part-time study and full-time provision.
- provide you with a wide range of practical laboratory skills to further enhance job prospects through the practical content of the course.
- provide you with a working knowledge of safety and security procedures in a laboratory setting.

The NPA Scientific Technologies group award has the Core Skills of *Problem Solving* at SCQF level 6 and *Numeracy* at SCQF level 5 embedded in it. You may also have the opportunity to develop the Core Skills of *Working with Others* at SCQF level 5 and *Information and Communication Technology (ICT)* at SCQF level 4.

9.1 Course content

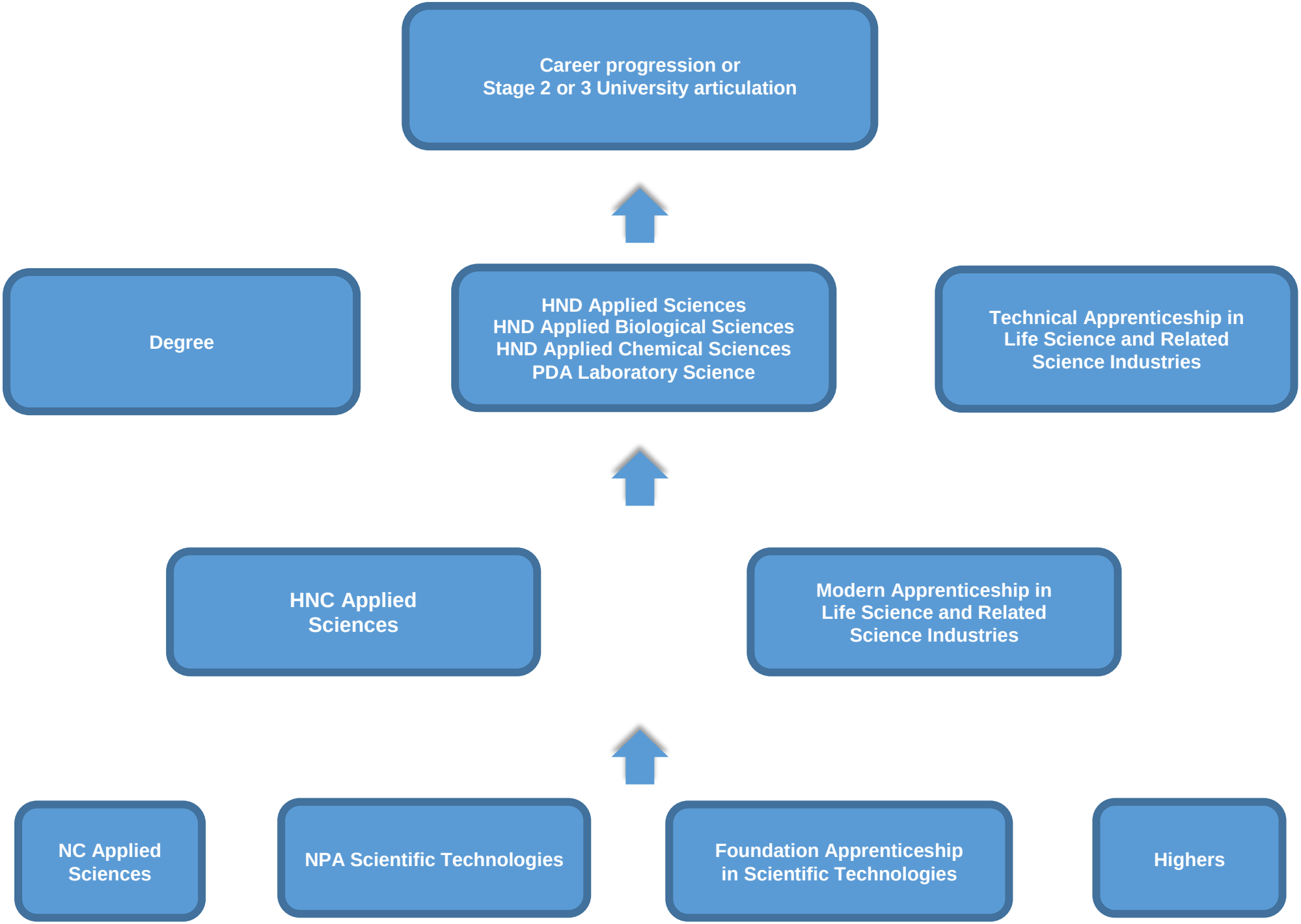
The NPA Scientific Technologies group award is an SCQF level 6 qualification which contains 4 credits (24 SCQF credit points). In order to achieve the NPA Scientific Technologies group award, you must achieve all 4 credits.

It is recommended that all learners be given a copy of the group award structure from Section 2 with clarification and explanation as appropriate.

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/diary on the experiment.

It may be possible to study for the NPA Scientific Technologies group award on a part-time basis.

Progression opportunities to and from the NPA Scientific Technologies group award are illustrated in the diagram following: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