Arrangements for:

National Progression Award (NPA) in Animal Technology

at SCQF level 6

Group Award Code: G9XY 46

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Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of National Qualification Group Awards.

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.

Version number	Description	Date	Authorised by

Contents

1 Introduction

This is the Arrangements Document for the revised Group Award in Animal Technology, at SCQF level 6, which was validated in September 2010. This document includes: background information on the development of the Group Award, its aims, guidance on access, details of the Group Award structure, and guidance on delivery.

The NPA in Animal Technology is a revised version of the SPA in Animal Technology (Code G7YT 12).

The new NPA provides an introductory qualification in Animal Technology for technicians in Animal units within universities, research institutes and research companies. The course is designed to be studied at work in conjunction with the normal training a junior technician would receive from supervisors. It is not possible to study the course except as a technician working in a recognised experimental animal unit or facility. The course develops practical skills in maintaining experimental animals and provides underpinning knowledge in the areas of:

- biology
- measurement and recording
- calculation
- health and safety

Candidates who pass the NPA can move up to the next level, at present the IAT level 3 Modular Course, which trains technicians up to the level of supervisor or unit manager.

2 Rationale for the revision of the Group Award(s)

The National Certificate NPA in Animal Technology is designed as an introductory course for technicians in animal units. Many of these are junior technicians who are recent school or college leavers. Most of the students work in animal units at universities or research institutes. The SPA course was set up in 2006 at the request of a number of Scottish universities and research institutes.

The original units were derived from SCOTVEC units and from IAT courses which had been used for many years. By 2005 both of them were out of date in terms of current animal technology practise and as a result the previous SCOTVEC units were completely revised as new SQA Units. IAT completely revised all of their courses for animal technicians in 2006-07.

The SQA units were revised in 2005 by experienced animal unit managers or supervisors, and three of the original four writers were engaged in producing the NPA units. The SPA was designed at the request of, and in consultation with Scottish university animal technicians, and over the last four years it appears to have met their training needs successfully.

2.1 Vocational Skills

The main vocational skills developed and certified by the course are:

- Routine care of laboratory animals, including environmental monitoring, caging, handling animals, identification and record keeping, cleaning and sterilisation of cages, breeding and monitoring development, compliance with relevant legislations.
- Maintenance of health in laboratory animals, including signs of health and ill-health, diet, sources and prevention of disease.
- An introduction to experimental procedures, including taking samples of blood and other tissues, production and care of transgenic animals, pre and post-operative care of experimental animals.
- Measuring and practical skills, including weighing, making up solutions and drug doses, autoclaving, environmental monitoring, recording growth of individuals and groups, anaesthesia, autopsy, examination for parasites.

2.2 Underpinning Knowledge

Underpinning Knowledge developed by the course includes:

- anatomy and physiology of mammals
- causes and transmission of disease
- simple chemistry of solutions
- SI units and measurement
- legislation and the Home Office Regulations affecting animal units
- health and safety responsibilities of employers and employees in animal units

2.3 Candidates for the SPA/NPA

Candidates up to now have been junior animal technicians responsible for routine care of the animals, and sometimes are involved in simple experimental procedures. Many candidates have recently left school or college, but some are also people who have been doing the job for some time but have never gained a related qualification.

The NPA certifies that a technician is competent in the theory and practise of animal technology at the level required for an ordinary grade technician. When the SPA was introduced in 2006 the original SCOTVEC units were modified to bring the content into line with current theory and practice. An example of this is the widespread production and use of transgenic animals, which was comparatively rare 10 years ago. The three writers of the animal technology units are two experienced and practicing animal unit managers, and a vet who works in university animal units, as a result the units and course materials reflect current practice in animal units.

2.4 Progression Routes

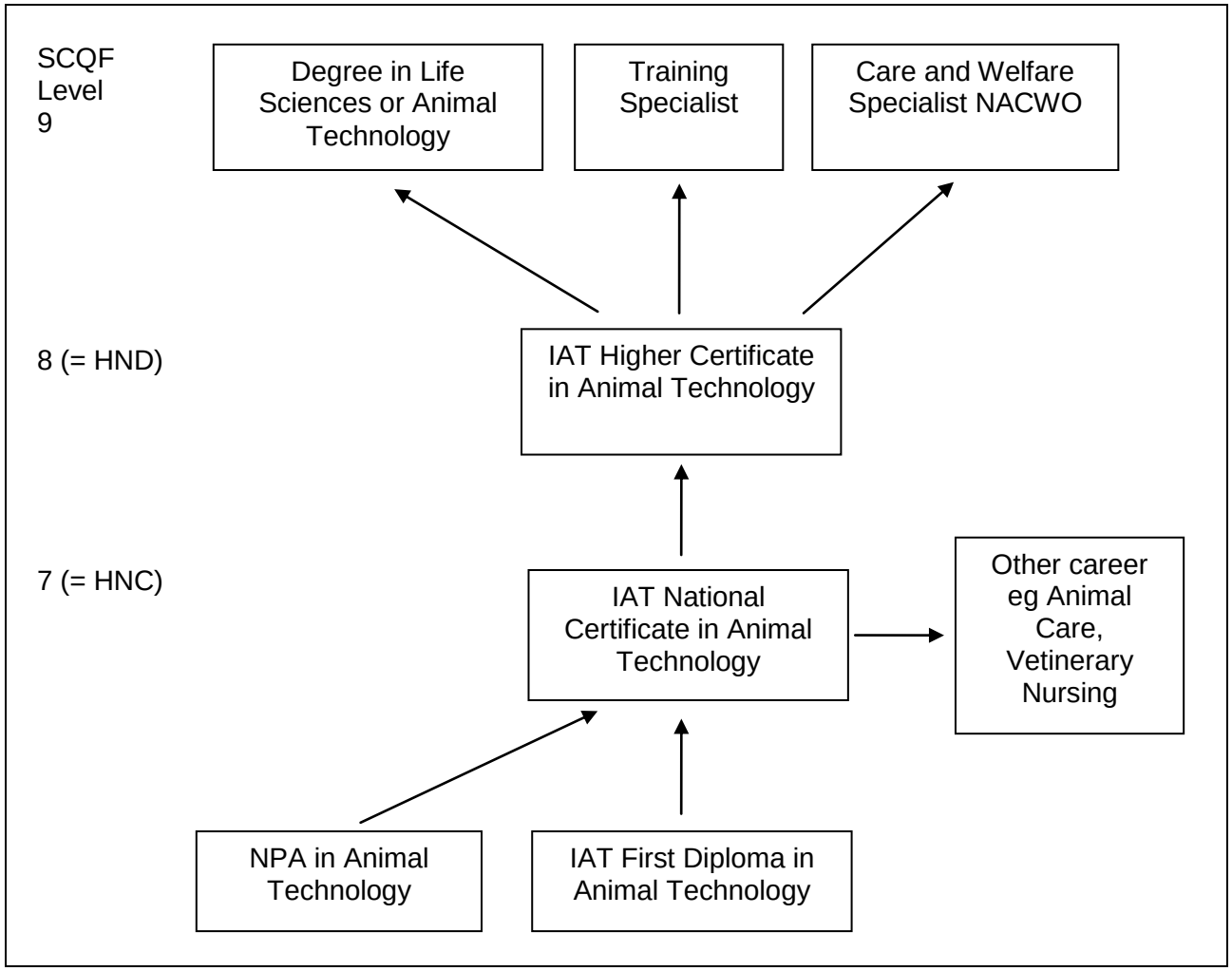
Animal technicians who wish to become supervisors or managers of animal units must become qualified to a higher level than the NPA. The only qualification that exists at present is the Certificate in Animal Technology which is accredited by the Institute of Animal Technology (IAT). This is gained by studying level 2 and level 3 IAT Modules and a practical examination. At present IAT recognises the SPA as equivalent to level 2. In fact it is somewhat above level 2, and in re-writing the units for the NPA we are including extra material to bring it up to IAT level 3.

Another progression route is the Life Sciences Modern Apprenticeship. Modern Apprenticeships (MAs) are developed by partnerships of industry, government agencies, and educational institutions. The Life Sciences MA has been developed over the last few years and MAs exist in Laboratory Science, Bio Manufacturing and Animal Pathology. An MA in Animal Husbandry to meet the needs of animal technicians is currently under development, the co-ordinating agency being the Sector Skills Council for Science, Engineering and Manufacturing technologies (SEMTA). Details of SEMTA's activities including the development of the Life Sciences MAs are on their website: www.semta.org.uk.

Commercial organisations such as pharmaceutical companies, contract research companies, and biotechnology companies are participating in the development of occupational standards and underpinning knowledge for the MA in Animal Husbandry.

A significant number of animal technicians in the UK are likely to follow the MA routes to qualification in the future.

2.5 Progression Routes in Animal Technology Qualifications



2.6 Comparison of content of NPA Course Units with IAT Modules

NPA Unit	IAT Module
Husbandry and Maintenance of Laboratory Animals	'Housing and Routine Care of Laboratory Animals' (level 2)
Covered in the revised version of 'Husbandry and Maintenance of Laboratory Animals'	'Housing and Routine Care of Laboratory Animals' (level 2)
Covered in the revised version of 'Husbandry and Maintenance'	'Breeding and Feeding' (level 2)
Covered by SG or Int 2 or GCSE Biology, the normal pre-requisite to start the course, also by the two Int 2 'Bridging' Units.	'Ethics, law and Euthanasia' (level 2)
Covered in 'Science Practical Skills', which includes calculations, tables, graphs, statistics, in practical reports. Report writing also tests communication skills. As at present delivered, the on-line units require students to demonstrate and develop ICT skills	'Physical Science' (level 2) Some basic concepts in physics and chemistry applied to laboratory work 'Numeracy, Communication and ICT' (level 2)
Covered by 'Maintenance of Health in Laboratory Animals'	Management of the animals' environment and disease control
Covered in 'Specialist Procedures in Animal Technology'	Scientific Procedures (level 3)
Covered in 'Specialist Procedures in Animal Technology'	Animal Breeding and Genetic Alteration (level 3)
Covered in 'Husbandry and Maintenance' and in 'Specialist Procedures in Animal Technology'	Ethics, animal legislation and transport (level 3)
Not covered by the NPA These units are at about higher level, but content does not correspond with existing Higher Biology Units	Cell Biology (level 3) Animal Physiology (level 3)

3 Aims of the Group Award

The course is intended as a basic education for animal technicians working within animal units at universities or research institutes. It is aimed at newly recruited staff and also more experienced staff who are looking to gain a qualification in animal technology.

3.1 Principal aims of the Group Award:

i To develop knowledge and skills in the care and husbandry of laboratory animals.

ii To develop knowledge and skills in relation to animal units and their equipment.

iii To develop knowledge of the dietary requirements of laboratory animals.

iv To develop knowledge of the diseases of laboratory animals, their transmission, and control.

v To develop knowledge of some routine experimental procedures, and pre and post-operative care of animals.

vi To develop knowledge of the production of transgenic rodents, and their maintenance in isolators.

vii To develop skills in using measuring instruments, and carrying out experimental procedures.

viii To develop skills in recording and presenting results, including calculations on the results.

ix To develop knowledge and understanding of health and safety in relation to animal units.

x To develop knowledge and understanding of cell biology and animal physiology.

xi To develop skills in independent learning and research.

xii To develop skills in the use of information technology.

xiii To prepare students for further studies in animal technology.

Grid showing linkages between stated aims and course units							
3.2 Specific aims of the Group Award	**Course Units**						
	Husbandry and maintenance of Laboratory Animals	Maintenance of Health in Laboratory Animals	Specialist Techniques in Animal Technology	Science Practical Skills	Working Safely	Living Cells	Animal Physiology
Knowledge and skills in the care and husbandry of laboratory animals	**x**						
Knowledge and skills in relation to animal units and their equipment	**x**						
Knowledge of the dietary requirements of laboratory animals		**x**					
Knowledge of the diseases of laboratory animals, their transmission and control		**x**					
Knowledge of some routine experimental procedures, pre- and post-operative care of animals			**x**				
Knowledge of the production of transgenic rodents and their maintenance in isolators			**x**				
Skills in using measuring instruments and carrying out routine laboratory procedures				**x**			
Skills in recording and presenting results including calculations on the results				**x**			
Knowledge and understanding of health and safety in relation to animal units					**x**		
Knowledge and understanding of cell biology and animal physiology						**x**	**x**
Develop skills in independent learning and research	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Develop skills in the use of Information Technology	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Prepare students for further study in Animal Technology	**x**	**x**	**x**	**x**	**x**	**x**	**x**

4 Recommended Access

The course is open only to technicians employed in designated animal units in institutions such as universities, hospitals, research institutes and companies. The college would reserve the right to check with the employer regarding anyone who applies for the course in order to ascertain that they are employed as an animal technician.

There are no formal academic entry qualifications. However we would normally expect a student to hold a basic qualification in Biology, such as Standard Grade or Intermediate 2. We are happy to advise students who lack this qualification how to prepare for the NPA course.

5 Group Award structure

5.1 Course Units

The NPA will consist of the same units as the SPA revised as indicated above. There are three Animal Technology units, one Science unit and one Health and Safety unit at Intermediate 2 level (SCQF level 5).

Unit Code	Unit title	SCQF level
F9XH 12	Husbandry and Maintenance of Laboratory Animals, 1 credit	SCQF level 6
F9XJ 12	Maintaining Health in Laboratory Animals, 1 credit	SCQF level 6
F9XK 12	Specialist Procedures in Animal Technology, 1 credit	SCQF level 6
F3TC 10	Science Practical Skills, 0.5 credits	SCQF level 4
D11N 11	Working Safely, 0.5 credits	SCQF level 5

There are two bridging units, available for study by distance learning, for students who have not previously studied biology. However, most students applying for the course have a biology qualification at Standard Grade, Intermediate 2, GCSE or above.
The bridging units are:

Unit Code	Unit title	SCQF level
DO 2611	Living Cells, 1 credit, Intermediate 2	SCQF level 5
DO 2811	Animal Physiology, 1 credit, Intermediate 2	SCQF level 5

The NPA is awarded at SCQF level 6.

5.2 Conditions for the award of the NPA in Animal Technology at SCQF level 6

The NPA in Animal Technology will be awarded to candidates who have successfully completed the 5 mandatory units (4 credits = 3 + 2 x ½ credits).

5.3 Core Skills

Core Skills which may be developed as part of the NPA are:

Communication	Written and oral communication of reports of practical activities.
Numeracy	Calculations involving animal weights, average weights, temperature and humidity and Averages of these, calculations of quantities of drugs and other chemicals to bemade up in solution, calculating suitable cage sizes.
Problem Solving	Planning and organising routine care schedules, preparing for experimental procedures Reviewing and evaluating data from environmental monitoring, health checks and examinations, autopsy examinations.
Information Technology	Accessing and using materials from an on-line course. Recording data eg environmental measurements using IT. Keeping required records or experimental animals using IT Accessing relevant course information from web sites of equipment manufacturers, technical journals, university and institute web sites.
Working with Others	Working as part of a team caring for animals and participating in experimental procedures.

Grid showing linkages between signposted Core Skills and course units							
5.4 Signposted Core Skills	**Course Units**						
	Husbandry and maintenance of Laboratory Animals	Maintenance of Health in Laboratory Animals	Specialist procedures in Animal Technology	Science Practical Skills	Working Safely	Living Cells	Animal Physiology
Communication: Written and oral communication of reports of practical activities	**X**	**X**		**X**		**X**	**X**
Numeracy: Calculations, graphs, use of SI units				**X**		**X**	**X**
Problem solving: Planning and organising routine care schedules.	**X**	**X**	**X**				
			X				
Preparing for experimental procedures	**X**	**X**		**X**			
Reviewing and evaluating data eg from environmental monitoring, health checks, autopsy examinations							
Information Technology Accessing and using materials from an on-line course.	**X**	**X**	**X**	**X**	**X**		
	X			**X**			
Recording data using IT.	**X**	**X**	**X**	**X**			
Keeping required records of animals using IT	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Accessing course information from websites	**X**	**X**	**X**	**X**	**X**		
Working with Others: Working as part of a team caring for animals and carrying out experimental procedures.							

5.5 Transferable Skills

Other skills that are developed in the NPA which might improve employability and/or career progression are:

- the ability to work independently on a learning task
- the ability to seek relevant required information for the internet, books, colleagues at work
- the ability to meet deadlines
- knowledge and understanding of the importance of health and safety in the workplace

6 Approaches to Delivery and Assessment

From the beginning of the development of the SPA in 2005 it was agreed that open learning was the only possible delivery method for the course. This is because:

- the number of animal technicians employed in Scotland is relatively small and scattered over all the main cities in Scotland, therefore attending classes is not feasible
- many technicians work in isolator units and would not be allowed to be in regular contact with staff from other units

6.1 Course Materials

The course materials for the units are available online on a website maintained by Stevenson College Edinburgh. The materials are fully illustrated and include links to websites eg manufacturers of equipment, diets, chemicals, suppliers of animals.

There are also many self assessment questions for students to work on, with answers provided.

Students can access the materials at work or at home. Much of the work encourages students to describe, explain, and report upon procedures commonly carried out in the care and maintenance of animals, and in experimental procedures. Students are encouraged to consult their colleagues and supervisor at work so the coursework forms part of their workplace training.

6.2 Assessments

Course assessments are devised by course tutors and sent electronically to workplace mentors who make them available to students.

Workplace mentors are vital to the delivery of this course. As mentioned above, they help students to learn as part of the training process. They also administer assessments in various ways, and send the assessments to the tutors for marking.

Assessment methods vary between the units and include the following:

a Short answer unseen tests of knowledge and understanding, which are administered by the mentor and sent to the tutor for marking.

b Longer written assignments, or case studies, which are sent by the mentor to the tutor for marking.

c Practical exercises which are supervised by the mentor who completes a checklist to certify the work done. Written reports are required for all practical exercises and are sent with the completed checklists to the tutor.

6.3 Guidance for intending students

The course units should be studied in the recommended order shown below. The whole course takes 2 years of part time study, on average. Approximate timings are shown, assuming study commences in September — October, the beginning of the Academic Year.

Husbandry and Maintenance of Laboratory Animals — 1 credit Working Safely — ½ credit	October — April Year 1
Maintenance of Health in Laboratory Animals — 1 credit Science Practical Skills — ½ credit	April Year 1 — January Year 2
Specialist Procedures in Animal Technology — 1 credit	January — June Year 2

Studying the Course

The course materials on the website can be used at work or at home if internet access is available. The information should be clearly presented and fully illustrated. There are Self-Assessment Questions, with answers available, to help your learning. All the course materials are written in relation to animal units, and by finding out more about the day-to-day activities in your own unit, you should be able to understand the materials and pass the assessments.

You should have a dedicated mentor or supervisor to help you with your work and train you in new techniques. A mentor or supervisor will supervise written and practical assessments, but your tutor will mark them.

It is expected that you will learn from your supervisor and other colleagues in the workplace. You should also be able to contact your tutor by e-mail.

Course Assessments

Written course assessments may be:

a Unseen tests, normally short answer questions carried out under examination conditions, marked by the tutor.

b Written assignments, where you find out about a particular topic using the internet, books, or your colleagues, and write a report which will be marked by the tutor.

Practical Course Assessments

If a practical technique or exercise is new to you, a supervisor will train you. When you feel confident, you will demonstrate the procedure for a supervisor, who will complete a checklist.

You **must** write a full report of the procedure, which is sent to the tutor to be

7 General information for centres

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**.

Internal and external verification

All instruments of assessment used within this/these Group Award(s) 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)**.

8 Glossary of terms

SCQF: This stands for the Scottish Credit and Qualification Framework, which is a new way of speaking about qualifications and how they inter-relate. We use SCQF terminology 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: One SCQF credit point equates to 10 hours of learning. NQ Units at SCQF levels 2–6 are worth 6 SCQF credit points, NQ Units at level 7 are worth 8 SCQF points.

SCQF levels: The SCQF covers 12 levels of learning. 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.

Dedicated Unit to cover Core Skills: This is a non-subject Unit that is written to cover one or more particular Core Skills.

Embedded Core Skills: This is where the development of a Core Skill is incorporated into the Unit and where the Unit assessment also covers the requirements of Core Skill assessment at a particular level.

Signposted Core Skills: This refers to the opportunities to develop a particular Core Skill at a specified level that lie outwith automatic certification.

Qualification Design Team: The QDT works in conjunction with a Qualification Manager/Development Manager to steer the development of the National Certificate/National Progression Award from its inception/revision through to validation. The group is made up of key stakeholders representing the interests of centres, employers, universities and other relevant organisations.

Consortium-devised National Certificates/National Progression Awards are those developments or revisions undertaken by a group of centres in partnership with SQA.

9 Appendices

Appendix 1: title of Appendix
Appendix 2: title of Appendix
Appendix 3: title of Appendix