# Arrangements for:

## PDA in Fish and Aquatic Science at SCQF level 7

### Group Award Code: G95R 47

### and

## HNC Fish Farming

### Group Award Code: G95W 15

**Validation date: June 2008**

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## Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of Higher National qualifications.

# 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 |
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# 1 Introduction

This is the Arrangement Document for the revised HNC in Fish Farming and new PDA in Fish and Aquatic Science at SCQF level 7, which were validated in June 2008. This document includes: background information on the development of the Group Awards, their aims, guidance on access, details of the Group Awards' structure, and guidance on delivery.

The revised HNC in Fish Farming (G95W 15) replaces the HNC in Fish Farm Production Management (G5CN 15).

The PDA in Fish and Aquatic Science at SCQF level 7 is complementary to, and subsumed within the HNC Fish Farming, and has been designed to meet the needs of distance learners with limited opportunity to attend a centre.

# 2 Rationale for the revision of the HNC and development of the PDA

The HNC is designed so that the Group Award can be achieved within one academic year of centre-based study, or over an extended period, whilst in employment, through distance-learning and the development of farm-based practical competence.

The PDA in Fish and Aquatic Science at SCQF level 7 can be achieved through distance-learning with limited centre attendance. It is derived from the knowledge-based Units in the HNC, allowing candidates to study and complete a Group Award remotely, without necessarily having access to a practical work site. Following subsequent completion of the PDA, progression to the HNC is possible normally after gaining suitable employment, providing the opportunity for evidencing practical skills development.

## 2.1 Initial review phase

Informal discussions were held with some Scottish salmon and trout farming companies. They gave their opinions of the knowledge and skills needed by husbandry persons and fish farm supervisors, and the role centres could play by developing and delivering accessible education and training to support workforce development.

Reference was made to feedback from students and staff from the programme reviews of the predecessor HNC Group Award held between 2001 and 2006.

In addition, the LANTRA labour skills foresight surveys demonstrate the importance of the up-skilling of the aquaculture workforce, preparing husbandry persons and farm site supervisors for the challenges ahead. For companies to maximise their return on their investment in fish production technology, more staff with higher level skills are required. In addition, the need for flexible courses that do not require long periods at a centre was apparent, as the number of entrants to industry via full-time courses is in decline.

Following informal support for the new HNC in Fish Farming, formal market research was initiated.

## 2.2 Summary of consultations and market research

**PDA Fish and Aquatic Science at SCQF level 7**

Both the salmon and trout farming sectors were supportive of a four credit (32 SCQF credit points) PDA that provides foundation knowledge of science underpinning fish farming practices.

**HNC Fish Farming**

The main findings of the market research and consultation processes were as follows:

- The industry, students and staff recognised the need for distance learning to widen access to the programme
- The technical content of Units needed to be updated, reflecting the main species farmed in Scotland, including salmonids and emerging alternative species such as halibut and cod
- The revision of Units in fish science, fish health, IT applications and record keeping was recommended
- On-growing systems, fish welfare and harvesting should be prominent in the course
- Fish processing should be included within the course, but not as a discrete Unit
- The balance between knowledge and practical skill development must be appropriate to industry needs
- Marine cage farming should be included in the course, from both theoretical and practical perspectives

# 3 Aims of the Group Awards

## 3.1 Aims of the PDA

### 3.1.1 General aims of the PDA

1 To enable progression within SCQF.
2 To develop independent study skills.

### 3.1.2 Specific aims of the PDA

3 To enhance candidates' prospects for entry to, and progression within, the fish farming industry.
4 To prepare distance-learning candidates for progression to the HNC in Fish Farming.
5 To develop candidates' knowledge of fish biology, fish health and aquatic science.
6 To develop candidates' practical skills in water quality monitoring and the monitoring and management of fish health.

## 3.2 Aims of the HNC

### 3.2.1 General aims of the HNC

1 To enable progression within SCQF.
2 To develop study and Core Skills
3 To develop self-reliance, team working and employability skills.

### 3.2.2 Specific aims of the HNC

4 To enhance candidates' prospects for employment and progression in the fish farming industry.
5 To develop candidates' technical knowledge of fish farming in accordance with their career and career enhancement aspirations.
6 To develop knowledge and skills in collecting and evaluating information relating to the aquatic environment, fish stocks and fish production operations.
7 To develop the ability of candidates to apply knowledge of fish science, water resources and fish health to modern fish farming practices.
8 To develop the knowledge and ability of candidates to assess risk and to take responsibility for the safety of commercial fish farm sites.
9 To prepare candidates for progression to the second year of the BSc Honours Aquaculture course at the University of Stirling (see Section 5.3).

## 3.3 Target groups

**PDA Fish and Aquatic Science at SCQF level 7**

The PDA is particularly suited to the following groups:

- Home-based learners wishing to study fish and aquatic science in order to provide the underpinning knowledge required to prepare them for entry to employment in fish farming
- Candidates in employment in fish farming at operative level, wishing to improve their underpinning knowledge to assist their potential for career progression within the industry

**HNC in Fish Farming**

- Staff already employed in the aquaculture industry, undertaking the HNC as part of personal development plans with the support of their employers; this is a change of focus, the traditional audience being newcomers to the industry
- Candidates holding the PDA in Fish and Aquatic Science at SCQF level 7, wishing to progress to an HNC programme
- Candidates already holding a relevant SVQ at level 2 and appropriate Core Skills, wishing to gain a higher education qualification to further their formal qualifications
- Candidates already holding a group of relevant National Units including Core Skills, wishing to gain a higher education qualification to further their formal qualifications
- school leavers with appropriate qualifications for direct entry

## 3.4 Employment opportunities

**PDA Fish and Aquatic Science at SCQF level 7**

The PDA has been designed to meet the needs of two groups of learners.

1. Those studying from home to gain an initial qualification that will assist them in entering the industry at husbandryman level.

2. Those in employment wishing to increase their understanding of fish biology, fish health and disease and the aquatic environment in order to improve their prospects of progression.

**HNC in Fish Farming**

- Fish farm site supervisor
- Hatchery manager
- On-growing site manager
- Senior fish husbandry person

The HNC has been designed to meet the needs of the fish farm site supervisor; consequently, employment opportunities are very good within salmon and trout farming, the main commercial sectors of the industry in the UK.

There are also growing employment opportunities for farming alternative species such as cod and halibut in the UK and a wide range of species overseas.

# 4 Access to Group Awards

## 4.1 PDA Fish and Aquatic Science at SCQF level 7

As with all SQA qualifications, access will be at the discretion of the centre. All candidates will normally be interviewed to ensure suitability and to determine that individual's expectations are realistic. The award will be made available through distance learning, complemented by weekend short courses, in order to widen access.

### 4.1.1 Formal qualifications

**Entry criteria**

Some examples of appropriate formal entry qualifications are specified below. They are not exhaustive or mutually exclusive and may be offered in a variety of combinations.

- Three Standard Grade passes at grades 1 or 2 (SCQF level 5), including maths or a science subject
- An SVQ at level 2 in Aquaculture or Fisheries Management (SCQF level 5)

### 4.1.2 Work experience

Mature applicants with suitable relevant work experience may be accepted for entry. Whilst work experience on a fish farm or fishery would be advantageous, candidates demonstrating their motivation to enter the fish farming industry, with alternative work experience and appropriate transferable skills, would be accepted.

Details of the recommended Core Skills entry levels are given below.

### 4.1.3 Recommended Core Skills entry levels

It would be beneficial if candidates possessed Core Skills entry levels as listed in the table below.

| Core Skill or component | SCQF level |
|---|---|
| Communication | 4 |
| Numeracy | 4 |

## 4.2 HNC Fish Farming

As with all SQA qualifications, access will be at the discretion of the centre and the following recommendations are for guidance only. All candidates will normally be interviewed to ensure suitability and to determine that individuals' expectations are realistic.

There are no unnecessary barriers to access. However, candidates have to be aware that there are physical tasks involved in many of the Units and the ability of individuals to deal with these aspects of the course will be ascertained in discussions at interview.

A range of access routes is recognised, and each application received will be evaluated, assisted by a guidance and selection interview to determine suitability.

### 4.2.1 Formal qualifications

**Entry criteria**

Some examples of appropriate formal entry qualifications are specified below. They are not exhaustive or mutually exclusive and may be offered in a variety of combinations.

- Five Standard Grade passes at grades 1 or 2 (SCQF level 5), including maths or a science subject
- Any two relevant National Courses at Higher level (SCQF level 6) together with three Standard Grade passes at grades 1 or 2 (SCQF level 5)
- A group of 15 or more National Units (SCQF levels 4-6) covering relevant topics including Core Skills (see Section 4.2.3)
- An SVQ at level 2 in Aquaculture or Fisheries Management (SCQF level 5) together with Core Skills (see Section 4.2.3)
- The PDA in Fish and Aquatic Science at SCQF level 7
- Any other relevant qualification from other awarding bodies provided the competences match those given above

Details of the recommended Core Skills entry levels are given below.

Where candidates do not have English as a first language, they should have achieved, or be working towards, an ESOL qualification at SCQF level 4 or above.

### 4.2.2 Work experience

Mature applicants with suitable relevant work experience may be accepted for entry. At least two years work experience on a fish farm or fishery would be appropriate. Applicants currently in relevant employment, and meeting the experience requirement, would be accepted, if they could demonstrate that their Core Skills were concordant with the levels specified below.

### 4.2.3 Recommended Core Skills entry levels

It would be beneficial if candidates possessed Core Skills entry levels as listed in the table below.

| Core Skill or component | SCQF level |
|---|---|
| Communication | 4 |
| Numeracy | 4 |
| IT | 4 |
| Problem Solving | 4 |
| Working with Others | 4 |

# 5 Group Awards' structure

## 5.1 Framework

**PDA Fish and Aquatic Science at SCQF level 7 (G95R 47)**

For a candidate to achieve the PDA in Fish and Aquatic Science at SCQF level 7, they must attain **all** of the mandatory Units (32 SCQF credit points/4 SQA credits).

**Mandatory Units**

Candidates must achieve **all** of the following mandatory Units (32 SCQF credit points/4 SQA credits):

| Unit title | Code | SCQF credit points | SCQF level | SQA credit value |
|---|---|---|---|---|
| Fish Health and Disease | F4S5 34 | 8 | 7 | 1 |
| Fish Science: Freshwater Fish | F4S8 34 | 16 | 7 | 2 |
| Water Resources for Aquaculture and Fisheries | F4N5 34 | 8 | 7 | 1 |

**HNC Fish Farming (G95W 15)**

For a candidate to achieve the HNC in Fish Farming, they must attain **all** of the mandatory Units (56 SCQF credit points/7 SQA credits), including one Graded Unit at SCQF level 7 (8 SCQF credit points/1 SQA credit), **plus**:

- a minimum of 16 SCQF credit points/2 SQA credits and a maximum of 32 SCQF credit points/4 SQA credits from restricted option Group 1
- a minimum of 8 SCQF credit points/1 SQA credit and a maximum of 24 SCQF credit points/3 SQA credits from Group 2 options

**Mandatory section**

Candidates must attain **all** of the following mandatory Units (56 SCQF credit points/7 SQA credits):

| Unit title | Code | SCQF credit points | SCQF level | SQA credit value |
|---|---|---|---|---|
| Fish Farming: Graded Unit 1 | F52S 34 | 8 | 7 | 1 |
| Fish Health and Disease | F4S5 34 | 8 | 7 | 1 |
| Fish Science: Freshwater Fish | F4S8 34 | 16 | 7 | 2 |
| Health and Safety Legislation: an Introduction | DF87 34 | 8 | 7 | 1 |
| Using Software Applications Packages | D85F 34 | 8 | 7 | 1 |
| Water Resources for Aquaculture and Fisheries | F4N5 34 | 8 | 7 | 1 |

**Optional Units**

Candidates **must** achieve a minimum of 16 SCQF credit points/2 SQA credits and a maximum of 32 SCQF credit points/4 SQA credits from restricted optional Group 1:

| ***Group 1: Restricted optional Units*** | | | | |
|---|---|---|---|---|
| **Unit title** | **Code** | **SCQF credit points** | **SCQF level** | **SQA credit value** |
| Fish Hatchery Management (Salmonid) | F4N4 34 | 16 | 7 | 2 |
| Fish Production Management | F4S6 34 | 16 | 7 | 2 |

Candidates **must** achieve a minimum of 8 SCQF credit points/1 SQA credit and a maximum of 24 SCQF credit points/3 SQA credits from Group 2 optional Units:

| ***Group 2: optional Units*** | | | | |
|---|---|---|---|---|
| **Unit Title** | **Code** | **SCQF credit points** | **SCQF level** | **SQA credit value** |
| Aquatic Ecosystems | DP4V 35 | 8 | 8 | 1 |
| Fish Farm Records | F4S4 34 | 8 | 7 | 1 |
| Fish Production Technology | F4S7 34 | 8 | 7 | 1 |
| Introduction to Genetics | A6K2 34 | 8 | 7 | 1 |
| Work Experience | DV0M 34 | 8 | 7 | 1 |
| Working Within a Project Team | DH21 34 | 8 | 7 | 1 |

Optional Unit selection will depend on individual candidates' proposed progression and career prospects. Candidates proposing to progress to higher education could include Units DP4V 35 *Aquatic Ecosystems* and A6K2 34 *Introduction to Genetics*. Candidates intending to take up or continue employment in the fish farming sector could include both restricted optional Units and either F4S4 34 *Fish Farm Records* or F4S7 34 *Fish Production Technology*. Candidates with little employment experience in the sector could include either DV0M 34 *Work Experienc*e or DH21 34 *Working Within a Project Team*.

**Graded Unit**

The purposes of the Graded Unit are to:

- demonstrate that candidates have achieved the principal aims of the HNC Fish Farming
- demonstrate candidates' abilities to integrate the knowledge and understanding from other Units comprising the award
- grade candidate performance

Graded Units can be assessed by project or examination. The vocational nature of this Group Award and the practical aspects of many of the Units influenced the decision to select a project as the assessment of choice. Project-based Graded Units can be assessed using a case study, an investigation or a practical assignment. The investigation gives the greatest degree of flexibility for the HNC Fish Farming and offers some of the benefits of the case study and the practical assignment as well as allowing contextualisation for individual briefs according to candidates' locations and circumstances.

Candidates will undertake one Graded Unit at SCQF level 7 for the HNC Fish Farming award.

## 5.2 Mapping information

### 5.2.1 Core Skills

The recommended Core Skills entry and exit levels for the HNC in Fish Farming are as follows:

| **HNC Fish Farming — Core Skills Entry/Exit level** | | |
|---|---|---|
| **Core Skill** | **Recommended Entry level** | **Recommended Exit level** |
| | | |
| Communication | SCQF level 4 | SCQF level 5 |
| Numeracy | SCQF level 4 | SCQF level 5 |
| Information Technology | SCQF level 4 | SCQF level 5 |
| Problem Solving | SCQF level 4 | SCQF level 6 |
| Working With Others | SCQF level 4 | SCQF level 5 |

### 5.2.2 Relation of aims to structure

See Appendix 1 for a table of alignment of Units with National Occupational Standards.

For a list of how the Units map to the aims of the HNC in Fish Farming see Appendix 2.

## 5.3 Articulation, professional recognition and credit transfer

As the PDA in Fish and Aquatic Science comprises Units that are mandatory in the HNC Fish Farming, candidates will already have 32 SCQF credit points/4 SQA credits that will contribute to the HNC in Fish Farming. To achieve the HNC Fish Farming candidates will have to fulfill all other conditions of the Group Award.

An articulation arrangement with the Institute of Aquaculture at the University of Stirling has been agreed whereby the HNC provides a suitable progression route to the second year of the BSc Hons Aquaculture course.

# 6 Approaches to delivery and assessment

## Content and context

The PDA in Fish and Aquatic Science at SCQF level 7 can be delivered and assessed with limited periods of attendance.

The HNC has been designed to be sufficiently flexible to support centre-based, work-based and home-based learners. The assessment of the practical Outcomes in the HNC requires access to a commercial fish farm.

## Mode, sequence, and methods of delivery

**PDA Fish and Aquatic Science at SCQF level 7**

The PDA could be delivered through distance learning, complemented with short periods in a centre to develop practical skills.

**HNC Fish Farming**

There are two delivery modes envisaged:

- the delivery of the HNC entirely in a centre
- the delivery of the knowledge-based Outcomes through distance learning with practical Outcomes delivered on a commercial fish farm

However, whichever mode of delivery is chosen, access to a fish farm is essential in order to complete the Group Award.

**Centre-based delivery of HNC Fish Farming**

Whilst the delivery of Units is not entirely sequential with some running concurrently, most of the Outcomes in the mandatory Units could be delivered before the knowledge-based Outcomes in the fish production Units. Therefore, the delivery of the mandatory Units (F4S5 34 *Fish Health and Disease*, F4S8 34 *Fish Science: Freshwater Fish*, and F4N5 34 *Water Resources for Aquaculture and Fisheries*) could be the first phase of delivery.

The delivery of the Unit D85F 34 *Using Software Applications Packages* could precede, overlap or occur in conjunction with, the Unit F4S4 34 *Fish Farm Records* in order to establish or confirm the basic IT skills underpinning computerised fish farm record keeping systems.

The basic fish husbandry skills, required to satisfy the practical Outcomes in the Units F4S6 34 *Fish Production Management* or F4N4 34 *Fish Hatchery Management (Salmonid)*, can be developed after, or concurrently with, the delivery of the knowledge-based core Units and some Outcomes of the Unit DF87 34 *Health and Safety Legislation: An Introduction*.

The knowledge-based Outcomes of the Units F4S6 34 *Fish Production Management*, F4N4 34 *Fish Hatchery Management (Salmonid)*, and F4S7 34 *Fish Production Technology*, the interpretation of records in the Unit F4S4 34 *Fish Farm Records* and the management of health and safety as required by the Unit DF87 34 *Health and Safety Legislation: an Introduction* all fall within the final phase of delivery.

The Graded Unit requires candidates to demonstrate ability in applying knowledge of fish biology and the aquatic environment to the management of fish stocks and the interpretation of fish farm stock records.

A possible sequence for delivery is given in the table below.

| | **Delivery sequence** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Unit** | **Sep** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** |
| Fish Science: Freshwater Fish (F4S8 34) | | | | | | | | | |
| Fish Health and Disease (F4S5 34) | | | | | | | | | |
| Water Resources for Aquaculture and Fisheries (F4N5 34) | | | | | | | | | |
| Fish Farming: Graded Unit 1 (F52S 34) | | | | | | | | | |
| Using Software Applications Packages (D85F 34) | | | | | | | | | |
| Fish Farm Records (F4S4 34) | | | | | | | | | |
| Health and Safety Legislation: an Introduction (DF87 34) | | | | | | | | | |
| Fish Production Technology (F4S7 34) | | | | | | | | | |
| Fish Production Management (F4S6 34) | | | | | | | | | |
| Fish Hatchery Management (Salmonid) (F4N4 34) | | | | | | | | | |
| Working Within a Project Team (DH21 34) | | | | | | | | | |

The optional Units, DV0M 34 *Work Experience*, A6K2 34 *Introduction to Genetics*, and DP4V 35 *Aquatic Ecosystems* have been excluded from the above delivery sequence, since it is not necessary to be prescriptive regarding their delivery times.

**Distance learning-based delivery of HNC Fish Farming**

The table below illustrates where there is an essential requirement for a fish farm and or for some centre-based delivery in order to complement the distance learning elements. Some optional Units are not included in the table since it is not necessary to be prescriptive. The first three Units listed comprise the PDA in Fish and Aquatic Science at SCQF level 7.

| **Unit** | **Delivery mode** | |
|---|---|---|
| | **Centre-based** | **Farm-based** |
| Fish Science: Freshwater Fish (F4S8 34) | Yes | |
| Fish Health and Disease (F4S534) | Yes | Yes |
| Water Resources for Aquaculture and Fisheries (F4N5 34) | | Yes |
| Fish Farming: Graded Unit 1 (F52S 34) | | Yes |
| Using Software Application Packages (D85F34) | | |
| Fish Farm Records (F4S4 34) | | Yes |
| Health and Safety Legislation: an Introduction (DF87 34) | | Yes |
| Fish Production Technology (F4S7 34) | | |
| Fish Production Management (F4S6 34) | | Yes |
| Fish Hatchery Management (Salmonid) (F4N4 34) | | Yes |
| Working Within a Project Team (DH21 34) | | Yes |

**Delivery of the PDA Fish and Aquatic Science at SCQF level 7 through distance learning**

The PDA could be delivered through distance learning, complemented by weekend courses to complete practical Outcomes. It may also be possible for some candidates to infill into some existing centre-based classes.

**Full time centre-based HNC**

The course will require one academic year of attendance and could be delivered through a combination of lectures, seminars, student-centred project work and investigations. This could be complemented by practical skills training on a commercial fish farm.

**Flexible work-based delivery of HNC**

Knowledge-based Outcomes could be delivered through paper-based or on-line distance learning, supported by tutors and/or work-based mentors. ICT-mediated learning (ICTL) could be provided to enrich the programme, including formative assessment through on-line multiple choice questions. This could limit attendance to 4 weeks, including an induction week to develop a learning community with tutor and peer support at the centre. Opportunities could be provided in subsequent blocks of centre attendance to consolidate knowledge and skills and prepare candidates for assessment.

## Assessment strategy

**PDA Fish and Aquatic Science at SCQF level 7**

For the PDA, any closed-book, supervised and observed practical assessments should be carried out during periods of centre attendance.

**HNC Fish Farming**

The HNC has been designed to subsume the PDA in Fish and Aquatic Science at SCQF level 7, allowing any candidates with a PDA to fast track HNC completion once access to a commercial fish farm for practical training and assessment is arranged.

The knowledge-based Outcomes are assessed though a combination of projects, closed-book and open-book assessments.

Practical Outcomes could be assessed through observation by assessors, and/or through the collection of work-based testimonials provided by farm managers, submitted in a portfolio as evidence for the assessor to judge.

The details of the assessment strategy will depend on the mode of delivery for particular cohorts and should be developed by the centre. In particular, the integration of assessments should be optimised.

Opportunities for re-assessment should be provided, in accordance with SQA's guidelines and the centres assessment policies.

## Guidance on distance learning

Full details on the suitability of individual Units for distance learning are contained in each individual Unit specification.

Distance learning candidates could have structured links with centre-based tutors and a range of assistive technologies could be made available. Other facilities such as adult literacy provision could be used where appropriate. For those already in employment, a mentoring system should be established, as appropriate.

# 7 General information for centres

**Candidates with disabilities and/or additional support needs**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* **(www.sqa.org.uk)**.

**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 and Quality Assurance for Colleges of Further Education* **(www.sqa.org.uk)**.

# 8 General information for candidates

## PDA Fish and Aquatic Science at SCQF level 7

The information below has been provided for you, as a prospective candidate, to help you to decide whether the course will meet your needs. It is advisable to speak to staff from a provider about the course details, including Unit content, delivery and assessment methods.

The PDA in Fish and Aquatic Science at SCQF level 7, available through distance learning, requires limited periods of centre attendance. It is designed to help you to develop your knowledge of fish biology, fish health and water characteristics, underpinning fish husbandry. By completing this programme, you will be better prepared for employment on a fish farm and will have gained 4 credits (32 SCQF credit points) towards the HNC in Fish Farming, should you choose to progress to this qualification subsequently.

**Aims of the PDA**

This PDA will provide you with the opportunity to develop your knowledge of fish and aquatic science which underpins modern aquaculture practices, thereby improving your employment prospects in the aquaculture industry.

The course is available through distance-learning, supported by tutors and limited attendance at the centre. The practical skills development will be undertaken in a centres laboratory and through fish farm site visits.

**Typical candidates**

The course is designed to suit the needs of several types of candidate:

- Home-based learners with no previous experience, aspiring to work in the fish farming industry and wishing to undertake a course to improve their employment prospects
- Fish farm employees, wishing to improve their prospects of progression to the fish farm site supervisor role by improving their knowledge of fish and aquatic science and their formal qualifications

**Knowledge and skills that will be developed**

You will develop your knowledge of fish anatomy and biology, the aquatic environment and fish health and disease. You will develop practical skills in fish dissection and the recognition of healthy and unhealthy organs and anatomical features. Laboratory based skills in water analysis will also be developed.

**Unit assessment styles**

The knowledge assessments will be a combination of open and closed-book tests and assignments. The practical assessments will be based on direct observation by an assessor and the submission of laboratory records.

**Conditions for attaining the Group Award**

You must complete all three Units, totalling four credits (32 SCQF credit points), to achieve the PDA in Fish and Aquatic Science at SCQF level 7.

**Progression routes**

By successfully completing the PDA, you will have completed four credits (32 SCQF credit points) towards the HNC in Fish Farming. You will then be able to complete the HNC which will allow you to progress to the second year of the BSc Honours Aquaculture course at the University of Stirling.

**Employment opportunities**

The PDA may improve your prospects of initial employment as a fish husbandry person. If you are already working in fish husbandry, your prospects of progression to fish farm site supervisor will be improved.

## HNC Fish Farming

The information below has been provided for you, as a prospective candidate, to help you to decide whether the course will meet your needs. It is advisable to speak to staff from a provider about the course details, including Unit content, delivery and assessment methods.

**Aims of the HNC**

This HNC will provide you with the opportunity to develop practical skills in fish farming, complemented by a knowledge of fish production methods and technology, improving your employment prospects and helping you to develop as a fish farm site supervisor.

The course is available through full-time attendance, or through a combination of distance-learning supported by tutors and limited attendance. The practical skills development can be undertaken on a commercial fish farm, overseen by an employer, working closely with assessors.

**Typical candidates**

The course is designed to suit the needs of several types of candidate:

- Staff already employed in the aquaculture industry, undertaking the HNC as part of personal development plans with the support of their employers; this is a change of focus, the traditional audience being newcomers to the industry
- Candidates holding the PDA in Fish and Aquatic Science at SCQF level 7, wishing to progress to an HNC programme
- Candidates already holding a relevant SVQ at level 2 and appropriate Core Skills, wishing to gain a higher education qualification to further their formal qualifications
- Candidates already holding a group of relevant National Units including Core Skills, wishing to gain a higher education qualification to further their formal qualifications
- School leavers with appropriate qualifications for direct entry

**Knowledge and skills that will be developed**

You will gain:

- practical fish production management skills
- a knowledge of fish science, fish health and water resources, with regard to their application to modern fish farming practices
- the ability to evaluate information relating to the aquatic environment, fish stocks and fish production operations
- Core Skills
- self-reliance, team working and employability skills
- an understanding of the management of health and safety on a commercial fish farm.

**Unit and Graded Unit assessment styles**

Knowledge-based Outcomes of Units are assessed through a combination of open- and closed-book assessments. Practical Outcomes can be assessed through observation by an assessor.

Project-based assessment requires candidates to evaluate and interpret data and complex information, culminating in the Graded Unit, whereby fish farm records are correlated with information on fish biology and the aquatic environment.

The Graded Unit takes the form of an investigation in which you will plan, develop and evaluate a given brief involving an actual fish farm. The resulting report will be graded either A (70-100%), B (60-69%) or C (50-59%).

**Conditions for attaining the Group Award**

To be awarded the HNC in Fish Farming, you must complete seven mandatory credits (56 SCQF credit points) and five restricted optional credits (40 SCQF credit points).

**Progression routes**

If you successfully complete the HNC then you may be accepted for entry to the second year of the BSc Honours Aquaculture course at the University of Stirling.

**Employment opportunities**

The HNC has been designed to meet the needs of the fish farm site supervisor; consequently, employment opportunities are very good within salmon and trout farming, the main commercial sectors of the industry in the UK.

There are also growing employment opportunities for farming alternative species such as cod and halibut in the UK and a wide range of species overseas.

# 9 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 HN credit is equivalent to 8 SCQF credit points. This applies to all HN Units, irrespective of their level.

**SCQF levels:** The SCQF covers 12 levels of learning. HN Units will normally be at levels 6–9. Graded Units will be at level 7 and 8.

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

**Graded Unit:** Graded Units assess candidates' 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 candidates to retain and adapt their skills and knowledge.

**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 HNC/HND 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 HNCs and HNDs** are those developments or revisions undertaken by a group of centres in partnership with SQA.

**Specialist single centre and specialist collaborative devised HNCs and HNDs** are those developments or revisions led by a single centre or small group of centres who provide knowledge and skills in a specialist area. Like consortium-devised HNCs and HNDs, these developments or revisions will also be supported by SQA.

# 10 Appendices

Appendix 1: Alignment of Units with National Occupational Standards
Appendix 2: Mapping of aims to Units

## Appendix 1: Alignment of Units with National Occupational Standards

In the following tables, an entry of 1 indicates that the HN Unit Outcome applies to the VQ Unit/Element; an entry of 0 indicates that it is not applicable.

### (a) Units in the PDA Award

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| F4S5 34 | Fish Health and Disease | 1 | Describe fin fish diseases | 1 | 1 | 0 | 0 | 0 |
| | | 2 | Explain the control and management of fin fish diseases | 1 | 1 | 1 | 0 | 0 |
| | | 3 | Conduct fin fish disease diagnoses | 1 | 1 | 1 | 1 | 1 |
| | | 4 | Conduct fin fish disease treatments | 1 | 1 | 1 | 1 | 1 |
| F4S8 34 | Fish Science: Freshwater Fish | 1 | Describe and classify fish | 0 | 0 | 0 | 0 | 0 |
| | | 2 | Describe the life cycles of selected species of fish | 1 | 1 | 0 | 0 | 0 |
| | | 3 | Explain the anatomy and physiology of fish | 1 | 1 | 0 | 0 | 0 |
| | | 4 | Locate and sample the external and internal anatomical features of fish | 0 | 1 | 0 | 1 | 0 |

**Units in the PDA Award continued**

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| F4N534 | Water Resources for Aquaculture and Fisheries | 1 | Describe the physical and chemical characteristics of water | 1 | 1 | 0 | 0 | 0 |
| | | 2 | Measure the physical and chemical characteristics of water | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Evaluate field data for a range of water types | 1 | 1 | 1 | 1 | 1 |

**Units in the PDA Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| F4S5 34 | Fish Health & Disease | 1 | Describe fin fish diseases | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Explain the control and management of fin fish diseases | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Conduct fin fish disease diagnoses | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 4 | Conduct fin fish disease treatments | 1 | 1 | 1 | 1 | 1 | 1 |
| F4S8 34 | Fish Science: Freshwater Fish | 1 | Describe and classify fish | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Describe the life cycles of selected species of fish | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Explain the anatomy and physiology of fish | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 4 | Locate and sample the external and internal anatomical features of fish | 1 | 1 | 1 | 1 | 1 | 0 |
| F4N5 34 | Water Resources for Aquaculture and Fisheries | 1 | Describe the physical and chemical characteristics of water | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Measure the physical and chemical characteristics of water | 1 | 1 | 1 | 1 | 1 | 0 |

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| | | 3 | Evaluate field data for a range of water types | 1 | 1 | 1 | 1 | 1 | 0 |

## (b) Mandatory Units in the HNC Award

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| F52S 34 | Fish Farming Graded Unit 1 | | | 1 | 1 | 1 | 1 | 1 |
| F4S5 34 | Fish Health and Disease | 1 | Describe fin fish diseases | 1 | 1 | 0 | 0 | 0 |
| | | 2 | Explain the control and management of fin fish diseases | 1 | 1 | 1 | 0 | 0 |
| | | 3 | Conduct fin fish disease diagnoses | 1 | 1 | 1 | 1 | 1 |
| | | 4 | Conduct fin fish disease treatments | 1 | 1 | 1 | 1 | 1 |
| F4S8 34 | Fish Science: Freshwater Fish | 1 | Describe and classify fish | 0 | 0 | 0 | 0 | 0 |
| | | 2 | Describe the life cycles of selected species of fish | 1 | 1 | 0 | 0 | 0 |
| | | 3 | Explain the anatomy and physiology of fish | 1 | 1 | 0 | 0 | 0 |
| | | 4 | Locate and sample the external and internal anatomical features of fish | 0 | 1 | 0 | 1 | 0 |

**Mandatory Units in the HNC Award continued**

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| DF87 34 | Health and Safety Legislation: an Introduction | 1 | Explain the legal framework which governs health and safety at work | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Explain the key features of the health and Safety at Work Act 1974 | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Explain how the Health and Safety at Work Act is implemented in the workplace | 1 | 1 | 1 | 1 | 1 |
| D85F 34 | Using Software Applications Packages | 1 | Operate a range of IT equipment paying due attention to other users | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Use a range of software application packages effectively and responsibly | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Find information from suitable computer data sources | 1 | 1 | 1 | 1 | 1 |
| F4N5 34 | Water Resources for Aquaculture and Fisheries | 1 | Describe the physical and chemical characteristics of water | 1 | 1 | 0 | 0 | 0 |

**Mandatory Units in the HNC Award continued**

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| | | 2 | Measure the physical and chemical characteristics of water | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Evaluate field data for a range of water types | 1 | 1 | 1 | 1 | 1 |

**Mandatory Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| F52S 34 | Fish Farming Graded Unit 1 | | | 1 | 1 | 1 | 1 | 1 | 1 |
| F4S5 34 | Fish Health & Disease | 1 | Describe fin fish diseases | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Explain the control and management of fin fish diseases | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Conduct fin fish disease diagnoses | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 4 | Conduct fin fish disease treatments | 1 | 1 | 1 | 1 | 1 | 1 |
| F4S8 34 | Fish Science: Freshwater Fish | 1 | Describe and classify fish | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Describe the life cycles of selected species of fish | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Explain the anatomy and physiology of fish | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 4 | Locate and sample the external and internal anatomical features of fish | 1 | 1 | 1 | 1 | 1 | 0 |
| DF87 34 | Health and Safety Legislation: an Introduction | 1 | Explain the legal framework which governs health and safety at work | 1 | 1 | 1 | 1 | 1 | 1 |

**Mandatory Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| | | 2 | Explain the key features of the health and Safety at Work Act 1974 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Explain how the Health and Safety at Work Act is implemented in the workplace | 1 | 1 | 1 | 1 | 1 | 1 |
| D85F 34 | Using Software Applications Packages | 1 | Operate a range of IT equipment paying due attention to other users | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Use a range of software application packages effectively & responsibly | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Find information from suitable computer data sources | 1 | 1 | 1 | 1 | 1 | 1 |
| F4N5 34 | Water Resources for Aquaculture and Fisheries | 1 | Describe the physical and chemical characteristics of water | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Measure the physical and chemical characteristics of water | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Evaluate field data for a range of water types | 1 | 1 | 1 | 1 | 1 | 0 |

## (c) Restricted optional Units and optional Units in the HNC Award

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit Code** | **Unit Title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| DP4V 35 | Aquatic Ecosystems | 1 | Analyse features of aquatic ecosystems | 1 | 1 | 0 | 0 | 0 |
| | | 2 | Evaluate features affecting biodiversity | 1 | 0 | 0 | 0 | 0 |
| | | 3 | Perform an investigation of an aquatic ecosystem and analyse the results | 1 | 1 | 1 | 1 | 1 |
| F4S4 34 | Fish Farm Records | 1 | Compile and calculate data to monitor the production of fish stock | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Maintain fish stock records in compliance with legal requirements | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Maintain an inventory and record of fish farm equipment and resources | 1 | 1 | 1 | 1 | 1 |
| | | 4 | Maintain a computer-based fish record system | 1 | 1 | 1 | 1 | 1 |
| F4N4 34 | Fish Hatchery Management (Salmonid) | 1 | Describe the design and function of hatchery equipment | 1 | 1 | 1 | 0 | 0 |

**Restricted optional Units and optional Units in the HNC Award continued**

| Mandatory VQ Units and Elements |
|---|

| | | | | Unit Aqc9. Regulate the aquatic production environment | Unit Aqc10. Implement the production of farmed fish for sale or transfer | Unit CU3. Promote, monitor and maintain health, safety and security | | |
|---|---|---|---|---|---|---|---|---|
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| | | 2 | Estimate the production potential of a hatchery | 1 | 1 | 1 | 0 | 0 |
| | | 3 | Explain the principles of hatchery stock management | 1 | 1 | 1 | 0 | 0 |
| | | 4 | Conduct ova production and husbandry operations | 1 | 1 | 1 | 1 | 1 |
| | | 5 | Conduct juvenile fish rearing operations | 1 | 1 | 1 | 1 | 1 |
| F4S6 34 | Fish Production Management | 1 | Explain the design features of fish ongrowing systems affecting production | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Explain the principles of feed management required to achieve efficient fish growth | 1 | 1 | 0 | 0 | 0 |
| | | 3 | Monitor fish growth and performance in order to assess fish production efficiency | 1 | 1 | 1 | 1 | 0 |
| | | 4 | Conduct fish sampling operations in order to manage efficient fish production | 1 | 1 | 1 | 1 | 0 |

**Restricted optional Units and optional Units in the HNC Award continued**

| Mandatory VQ Units and Elements |
|---|

| | | | | Unit Aqc9. Regulate the aquatic production environment | Unit Aqc10. Implement the production of farmed fish for sale or transfer | Unit CU3. Promote, monitor and maintain health, safety and security | | |
|---|---|---|---|---|---|---|---|---|
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| F4S7 34 | Fish Production Technology | 1 | Explain the application of technology to fish production | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Evaluate commercial fish production equipment | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Explain the function and operation of recirculation systems | 1 | 1 | 1 | 1 | 0 |
| A6K2 34 | Introduction to Genetics | 1 | Explain DNA structure with regard to cell division | 0 | 0 | 1 | 0 | 0 |
| | | 2 | Explain simple inheritance in terms of genetics | 0 | 0 | 1 | 0 | 0 |
| | | 3 | Explain dihybrid inheritance in terms of genetics | 0 | 0 | 1 | 0 | 0 |
| | | 4 | Describe the principles and techniques of molecular genetics with respect to recombinant DNA technology | 0 | 0 | 1 | 0 | 0 |
| DV0M 34 | Work Experience | 1 | Plan and organise work experience | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Undertake the work experience | 1 | 1 | 1 | 1 | 1 |

**Restricted optional Units and optional Units in the HNC Award continued**

| | | | | Mandatory VQ Units and Elements | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc9. Regulate the aquatic production environment** | **Unit Aqc10. Implement the production of farmed fish for sale or transfer** | **Unit CU3. Promote, monitor and maintain health, safety and security** | | |
| **Unit code** | **Unit title** | **Outcomes** | | | | **CU3.1 Monitor and maintain the health, safety and security of the workplace** | **CU3.2 Promote good standards of health and safety** | **CU3.3 respond to health emergencies within the workplace** |
| | | 3 | Evaluate the work experience | 1 | 1 | 1 | 1 | 1 |
| DH21 34 | Working Within a Project Team | 1 | Individually gather and / or read and evaluate written, graphical or pictorial information on a team task, and in co-operation with others, decide on a course of action for completing the project | 1 | 1 | 1 | 1 | 1 |
| | | 2 | In co-operation with others, plan, organise and carry out the task | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Individually, produce a written report in a prescribed format, reflecting on what has been achieved and drawing conclusions for the future | 1 | 1 | 1 | 1 | 1 |

**Restricted optional Units and optional Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| DP4V 35 | Aquatic Ecosystems | 1 | Analyse features of aquatic ecosystems | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Evaluate features affecting biodiversity | 0 | 1 | 0 | 0 | 0 | 0 |
| | | 3 | Perform an investigation of an aquatic ecosystem and analyse the results | 1 | 1 | 1 | 1 | 1 | 1 |
| F4S4 34 | Fish Farm Records | 1 | Compile and calculate data to monitor the production of fish stock | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Maintain fish stock records in compliance with legal requirements | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Maintain an inventory and record of fish farm equipment and resources | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 4 | Maintain a computer-based fish record system | 1 | 1 | 1 | 1 | 1 | 0 |
| F4N4 34 | Fish Hatchery Management (Salmonid) | 1 | Describe the design and function of hatchery equipment | 1 | 1 | 1 | 1 | 1 | 0 |

**Restricted optional Units and optional Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| | | 2 | Estimate the production potential of a hatchery | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Explain the principles of hatchery stock management | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 4 | conduct ova production and husbandry operations | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 5 | Conduct juvenile fish rearing operations | 1 | 1 | 1 | 1 | 1 | 1 |
| F4S6 34 | Fish Production Management | 1 | Explain the design features of fish ongrowing systems affecting prod'n | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Explain the principles of feed management required to achieve efficient fish growth | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Monitor fish growth and performance in order to assess fish production efficiency | 1 | 1 | 1 | 1 | 1 | 1 |

**Restricted optional Units and optional Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| | | 4 | Conduct fish sampling operations in order to manage efficient fish production | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | | | | | | | |
| F4S7 34 | Fish Production Technology | 1 | Explain the application of technology to fish production | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Evaluate commercial fish production equipment | 1 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Explain the function and operation of recirculation systems | 1 | 1 | 1 | 1 | 1 | 0 |
| A6K2 34 | Introduction to Genetics | 1 | Explain DNA structure with regard to cell division | 0 | 1 | 1 | 1 | 1 | 0 |
| | | 2 | Explain simple inheritance in terms of genetics | 0 | 1 | 1 | 1 | 1 | 0 |
| | | 3 | Explain dihybrid inheritance in terms of genetics | 0 | 1 | 1 | 1 | 1 | 0 |

**Restricted optional Units and optional Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| | | 4 | Describe the principles and techniques of molecular genetics with respect to recombinant DNA technology | 0 | 1 | 1 | 1 | 1 | 0 |
| DV0M 34 | Work Experience | 1 | Plan and organise work experience | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 2 | Undertake the work experience | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 3 | Evaluate the work experience | 1 | 1 | 1 | 1 | 1 | 1 |
| DH21 34 | Working Within a Project Team | 1 | Individually gather and/or read and evaluate written, graphical or pictorial information on a team task, and in co-operation with others, decide on a course of action for completing the project | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 2 | In co-operation with others, plan, organise and carry out the task | 1 | 1 | 1 | 1 | 1 | 1 |

**Restricted optional Units and optional Units in the HNC Award continued**

| | | | | Optional VQ Units and Elements | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Unit Aqc8. Implement fin fish feeding regimes** | **Unit Aqc13. Control the implementation of health programmes & fish treatments** | **Unit Aqc14. Control fish hatchery production** | **Unit CU53. Treat health problems in fish** | | **Unit B6. Provide leadership in your area of responsibility** |
| **Unit code** | **Unit title** | **Outcomes** | | | | | **CU53.1. Prepare to treat fish** | **CU53.2. Treat fish** | |
| | | 3 | Individually, produce a written report in a prescribed format, reflecting on what has been achieved and drawing conclusions for the future | 1 | 1 | 1 | 1 | 1 | 1 |

## Appendix 2: Mapping of aims to Units

**Group Award: PDA in Fish and Aquatic Science (G95R 47)**

| Unit No | Unit name | Aim 1 | Aim 2 | Aim 3 | Aim 4 | Aim 5 | Aim 6 |
|---|---|---|---|---|---|---|---|
| F4S5 34 | Fish Health and Disease | Yes | Yes | Yes | Yes | Yes | Yes |
| F4S8 34 | Fish Science: Freshwater Fish | Yes | Yes | Yes | Yes | Yes | |
| F4N5 34 | Water Resources for Aquaculture and Fisheries | Yes | Yes | Yes | Yes | Yes | Yes |

**Group Award: HNC in Fish** Farming (G95W 15)

| Unit No | Unit name | Aim 1 | Aim 2 | Aim 3 | Aim 4 | Aim 5 | Aim 6 | Aim 7 | Aim 8 | Aim 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| F52S 34 | Fish Farming Graded Unit 1 | Yes | Yes | | Yes | | Yes | Yes | | Yes |
| F4S5 34 | Fish Health and Disease | Yes | Yes | | Yes | Yes | Yes | Yes | Yes | Yes |
| F4S8 34 | Fish Science: Freshwater Fish | Yes | Yes | | Yes | | Yes | Yes | | Yes |
| DF87 34 | Health and Safety Legislation: an Introduction | Yes | Yes | Yes | Yes | | | | Yes | Yes |
| D85F 34 | Using Software Applications Packages | Yes | Yes | | Yes | | Yes | Yes | | Yes |
| F4N5 34 | Water Resources for Aquaculture and Fisheries | Yes | Yes | | Yes | Yes | Yes | Yes | | Yes |
| F4N4 34 | Fish Hatchery Management (Salmonid) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| F4S6 34 | Fish Production Management | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | |
| DP4V 35 | Aquatic Ecosystems | Yes | Yes | | | | | | | Yes |
| F4S4 34 | Fish Farm Records | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | |
| F4S7 34 | Fish Production Technology | Yes | Yes | | Yes | Yes | | Yes | | |
| A6K2 34 | Introduction to Genetics | Yes | | | | | | | | Yes |
| DV0M 34 | Work Experience | Yes | Yes | | Yes | | | | Yes | |
| DH21 34 | Working Within a Project Team | Yes | Yes | | Yes | | | | Yes | |