National Unit Specification: general information

UNIT Global Aquaculture (SCQF level 5)

CODE F6TF 11

SUMMARY

The Unit will develop the candidate's understanding of the principles of aquaculture, alongside an appreciation of the importance of the industry as a food producing sector of the global food market. The candidate will develop an understanding of the range of production strategies used globally, from extensive through to intensive systems, and the factors that have influenced their development. An awareness of the socio-economic importance of aquaculture to rural communities is developed, acknowledging potential detrimental impacts of aquaculture and important preventative and remedial measures.

OUTCOMES

1 Investigate the factors driving the development of aquaculture as a supplier of farmed aquatic produce to the global food market.
2 Describe the range and resource implications of aquaculture production strategies.
3 Describe the impacts of aquaculture.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

CREDIT VALUE

1 credit at SCQF level 5 (6 SCQF credit points at SCQF level 5*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: SJ

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Version: 01

National Unit Specification: general information (cont)

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CORE SKILLS

There is no automatic certification of Core Skills in this Unit.

There are opportunities for Core Skill development; these are highlighted in the Support Notes of this Unit Specification.

National Unit Specification: statement of standards

UNIT Aquaculture: Global Production (SCQF level 5)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Investigate the factors driving the development of aquaculture as a supplier of farmed aquatic produce to the global food market.

Performance Criteria

(a) The origins of aquaculture are identified accurately.
(b) The aquatic species selected for aquaculture are described accurately.
(c) The volume and value of aquatic species globally produced is quantified accurately.
(d) The total fish products produced by aquaculture globally are identified and presented accurately.

OUTCOME 2

Describe the range and resource implications of aquaculture production strategies.

Performance Criteria

(a) The diversity of aquaculture production strategies is described clearly.
(b) The natural resource requirements to support different production strategies are described accurately.
(c) The biological and economic factors that determine the viability of an aquatic species for aquaculture are outlined clearly.

OUTCOME 3

Describe the impacts of aquaculture.

Performance Criteria

(a) The socio-economic benefits of aquaculture are described accurately.
(b) The potential detrimental impacts of aquaculture are described accurately.
(c) Describe how aquaculture is regulated to limit detrimental impacts.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Written and/or oral evidence, generated under open-book conditions, is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria. Candidates will have access to teaching notes, reference books and online assistance.

Outcome 1

The candidate must:

- demonstrate that the origins of aquaculture are identified correctly for a minimum of one country or continent subjected to temperate conditions, and for one country or continent subjected to tropical conditions.
- select a minimum of two aquatic species for aquaculture, one temperate and one tropical and, describe their environmental requirements.
- quantify, from given data, the supply of global aquaculture products graphically with reference to wild and farmed sources for the last ten years.
- identify from given data, the total fish products produced by aquaculture globally and present a national breakdown with reference to current production levels and production forecasts.

Outcome 2

The candidate must:

- describe a range of production strategies including one example of each of the following; monoculture, poly-culture, and integrated (multi-trophic) aquaculture. In each example, the level of intensification and feeding regimes should be described as a minimum. Each example should refer to land and water requirements.
- describe a minimum of one biological factor and one economic factor that make two aquatic species suitable for aquaculture, one temperate and one tropical, exemplifying a specific viable production strategy relevant to each.

Outcome 3

The candidate must:

- describe a minimum of one social and one economic benefit of aquaculture, on one community, in either a temperate or a tropical region.
- describe a minimum of three potential detrimental impacts and how these impacts can be regulated.

The Assessment Support Pack for this Unit provides appropriate instruments of assessment, assessor checklists and assessor guidance. Centres wishing to develop their own assessments should refer to the assessment support pack to ensure a comparable standard.

Centres must be satisfied that the evidence submitted is the work of individual candidates.

National Unit Specification: support notes

UNIT Aquaculture: Global Production (SCQF level 5)

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit can be undertaken as a part of the NPA in Aquaculture at SCQF level 5, or as a free-standing Unit.

This Unit is a knowledge based Unit which relates to the whole industry and as such does not align to a specific National Occupational Standards Unit.

The candidate will develop an understanding of the principles of aquaculture, and an appreciation of the goals of 'aquaculturalists' to be skilled food producers. The candidate will also recognise the diversity of activities and the wide range of aquatic habitats used in both temperate and tropical climates. This will highlight the importance of aquaculture as a source of subsistence to some communities, and as a cash crop to others.

Through exploring the origins of aquaculture, the candidate will understand how aquaculture developed from natural fisheries. Finfish, shellfish and algal species will be considered. The main socio-economic drivers leading to the development of aquaculture as a major food producer will be explored in both a temperate and a tropical context.

Different production strategies will be explored and exemplified, including intensive, extensive and semi-intensive aquaculture systems, monoculture, poly-culture and integration with agriculture (integrated multi-trophic aquaculture). The factors that determine the suitability of a species for aquaculture will be considered, emphasising the ease of culture and domestication, tolerance to disease and fluctuations in the environment, growth rate and the demand for the end product as major factors.

It is important for candidates to be aware of the potential issues and impacts associated with aquaculture in a range of contexts. This includes environmental impacts, impacts on tourism, the pressure on industrial fisheries to produce the fish meal and fish oil needed to culture carnivorous finfish, disease problems, and the competition for resources.

The future opportunities for aquaculture production and the demand for protein and fish products should be investigated, revealing the distribution of output from aquaculture in the fish producing countries. This should be balanced by the anticipated challenges, and business growth restrictions, such as planning regulations, the availability of raw materials, climate change, transport costs and environmental protection.

The future sustainability of different aquaculture systems could be considered in the context of the current resource constraints and other limiting factors.

National Unit Specification: support notes (cont)

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GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

A candidate-centred approach to delivering this Unit is encouraged. Initial aquaculture concepts can be delivered in class, illustrated by videos, images and field trips where appropriate and available to help consolidate learning. Some time should be spent on library skills and use of the internet for research to prepare candidates for the Unit

The Unit allows a high degree of candidate choice in the project phase and group work is to be encouraged. Individual presentations by each group on their findings will allow all candidates to gain a wider appreciation of aquaculture practices globally.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

There may be opportunities for candidates to develop the Core Skills of *Communication* and *Information Technology* throughout this Unit. In addition, there is some opportunity to develop *Numeracy* through data interpretation and graphical presentation, associated with Outcome 1.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Centres should ensure that candidates are provided sufficient time and assistance to find the information that they need.

Outcome 1 can be assessed though an open-book investigative assignment requiring data search, collection, interpretation and presentation, supported by a brief text and supporting graphical information.

Outcomes 2 and 3 can be assessed through two integrated projects, one embracing the Evidence Requirements for aquaculture in a temperate context and the other embracing aquaculture in a tropical context.

Time should be allowed for any necessary re-assessment.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. 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 e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005).*

It would be acceptable to submit evidence in electronic format.

National Unit Specification: support notes (cont)

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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**