National Unit Specification: general information

UNIT Aquatic Environment: Local Investigation (SCQF level 4)

CODE F6TA 10

SUMMARY

The Unit is designed to enable candidates to develop an appreciation of the characteristics of a local aquatic environment which is being used as an aquaculture site. Candidates will apply basic map interpretation skills to develop a physical description of the environment, measure water characteristics of importance to aquaculture and identify common aquatic flora and fauna.

On completion, the candidate should understand the main physical, chemical and biological influences on aquaculture site selection.

OUTCOMES

1 Investigate a local aquatic environment.
2 Describe a local aquatic environment used for aquaculture.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

CREDIT VALUE

0.5 credit at SCQF level 4 (3 SCQF credit points at SCQF level 4*).

**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: RG

Publication date: May 2009

Source: Scottish Qualifications Authority

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

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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 a local aquatic environment.

Performance Criteria

(a) The key water parameters are measured accurately, using the appropriate equipment in accordance with manufacturers' guidelines.
(b) The measured water parameters are recorded accurately in the appropriate Units.
(c) The local aquatic flora and fauna are identified and recorded accurately using common names.

OUTCOME 2

Describe a local aquatic environment used for aquaculture.

Performance Criteria

(a) The topography and physical characteristics of the aquatic environment and its immediate surroundings is described accurately.
(b) The range of values for specified water characteristics from given data is transferred and recorded accurately.
(c) The representation of the seasonal variations in the condition of the aquatic environment is drawn accurately.
(d) The records of the flora and fauna for common species are described accurately.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

Outcome 1 — Performance evidence, supported by an assessor observation checklist

The candidate must:

- measure the following on one occasion:
  - water temperature
  - dissolved oxygen
  - salinity (marine sites only)

and one other parameter in the case of a marine environment survey, and two other parameters in the case of fresh water.

- identify two common aquatic plants and four aquatic animals
- record all findings in a given template

Outcome 2 — Written and/or recorded oral evidence completed using given templates for either a marine, fresh still water or running still water habitat

The candidate must:

- gather data on either depth profiles or gradients from maps
- transfer given data, and compile it with data from the field for four parameters
- present seasonal profiles for four parameters, in graphical format
- present records for two aquatic plants and four aquatic animals

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

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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 20 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This is a mandatory Unit in the NPA Aquaculture (SCQF 4), but it can also be used as a free-standing Unit.

This Unit is aligned to National Occupational Standard (NOS) Unit CU52, Maintain the Aquatic Production Environment (Lantra - Sector Skills Council).

The candidates should be introduced to the aquatic environments used for aquaculture in Northern Europe, illustrating the main differences between the water characteristics of each (marine, running freshwater and still freshwater). The suitability of different environments for North European aquaculture enterprises is considered, matching water types to each enterprise.

Candidates should select a local aquatic environment used for aquaculture and investigate the water's physical, chemical and biological characteristics. The field data is gathered applying standard techniques for each parameter, supplemented by additional data, revealing typical seasonal changes in water characteristics for the specific environment. Candidates should develop an awareness of the influence of physical factors such as depth and topography in the case of marine environments and fresh still water, and gradients in the case of running freshwater on water characteristics such as salinity, water currents and water chemistry and the distribution of flora and fauna.

The field work should include an exploration of flora and flora common to the site, but with particular emphasis on species impacting on aquaculture, such as predator species, parasites, and fouling organisms, shell fish spat, and biological indicators of water quality.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The Unit lends itself to a range of approaches to teaching and learning. However, for level SCQF level 4, visual and interactive resources are a great assistance. Tutor led knowledge development can be used effectively in the early stages, building an understanding of underpinning concepts, including the environmental requirements of North European Aquaculture enterprises. However, the use of scientific terminology and jargon should be limited to the terms used in the aquaculture industry.

There is great scope for student-centred learning exercises based on text references, web-based resources and interactive IT-based learning objects presented within a VLE. Interactive exercises and regular formative assessment, incorporating on-line multiple-choice are recommended, in order to develop the candidate's understanding of the inter-relationships between the landscape, geology, land use and the aquatic environment.

It would be advantageous to have learning resource packages for each water type (marine, running freshwater, still freshwater) to allow independent study following the introduction of underpinning concepts.

Practical instruction should be included covering water sampling and water testing and map interpretation. The investigative project provides the opportunity for candidates to develop their planning skills and team work. During the latter stages of Unit delivery, candidates should be encouraged to take responsibility for organising their investigative project, and could be given a choice of sites to base their work on.

The Unit could be enhanced considerably though site visits to a range of aquatic environments and aquaculture sites illustrating key concepts. Talks from managers of aquaculture businesses would emphasise the influence that the aquatic environment has on the success of their farm and are encouraged, integrating with the delivery of other Units in the NPA.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

There are opportunities to asses a range of Core Skills, including *Numeracy, Communication,* and *Working with Others.*

Outcome 1 requires the candidate to measure and interpret scales on a map. Candidates with learning support needs will need assistance with this activity. However, the map reading process will provide ample opportunity for practising the manipulation of numerical information, through multiplication and division. The output can be used to create ‘graphic’ profiles drawn to scale.

For Outcome 1 the fieldwork requires planning and coordination. Whilst this activity could be teacher led, it is practicable and safe to allow groups of candidates to plan and organise their own field work, building skills in team leadership, team work and communication, overseen by the teacher.

Outcome 2 provides the opportunity to develop candidates’ skills in interpreting data and the production of written reports to a given structure.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

A range of assessment approaches is envisaged, including the completion of hand outs, closed-book restricted response questions, observation of practical tasks with accompanying checklists, and the completion of a short report to a given structure.

National Unit Specification: support notes

UNIT Aquatic Environment: Local Investigation (SCQF level 4)

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).*

Time should be allowed for any necessary re-assessment.

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**