



Dearbhú Cáilíochta  
agus Cáilíochtaí Éireann  
Quality and  
Qualifications Ireland

# QQI AWARDS STANDARDS.

Aquaculture

December 2023



# Foreword

The Qualifications and Quality Assurance Act 2012 requires QQI to ‘determine the standards of knowledge, skill or competence to be acquired, and where appropriate, demonstrated, by a learner before an award may be made by the Authority’. QQI award standards are based on the level indicators and award type descriptors of the National Framework of Qualifications (NFQ) and are governed by QQI Policy for the Determination of Award Standards.

Based on systematic engagement with subject matter expertise and public consultation, award standards for certain broad fields of learning were developed for QQI awards at level 1-4 on the NFQ. These standards represent an elaboration of the generic descriptors of the NFQ. They should facilitate experts in particular fields of learning to create the link between their programmes’ intended learning outcomes and the NFQ. Each award standard is cumulative, the statements of knowledge, skill and competence at NFQ levels 2, 3 and 4, build on the attainment of standards at lower levels, which are not necessarily reproduced at the higher level(s). The implementation and use of these standards is subject to QQI Policy and Criteria for the Validation of Programmes and QQI Policy for the Making of Awards. Whenever an award standard changes, programmes must be updated and validated against the new standards.

These standards are not programme specifications. It is through these, however, that the relationship between a programme, its component parts and the NFQ should be evident. The standards are a reference point and a point of comparison against which individual programmes may be justified.

They are intended to provide general guidance for articulating the learning outcomes associated with a particular field of learning. In designing programmes, providers must take cognisance of the standards for specific fields of learning where they generally relate to the programme being developed. It is, however, recognised that there is a significant growth in multi-disciplinary/inter-disciplinary programmes; there are emerging fields of learning; and in addition, within each field there is the vast spectrum of programmes possible based on a wide range of purpose. In this context, it is not possible to have a standard, or multiple standards, that cater for the complete range of programmes possible. It is therefore expected that the standards for specific fields of learning will be used as reference points for the design of programmes. In designing programmes, providers can draw from more than one standard.

In drafting the standards every effort has been made to ensure that they will provide for flexibility and variety in the design of programmes and therefore encourage innovation within an overall agreed framework. It is not expected that all programmes will include every learning outcome identified in a standard. It is, however, expected that many programmes will include learning outcomes that are not included in the relevant standard.

When designing a programme, each learning outcome in the standard should be considered. Where departure from these is necessary, it should be justified in the context of the specific orientation of the programme and other facts pertaining to it. Each programme provider should be able to demonstrate how the design and content of its own programmes has been informed by the standard.

The level descriptors of the Framework, the award type descriptors and consequently the standards for the specific fields of learning are divided into three different types of learning outcomes - knowledge, skill and competence. These strands are further subdivided into eight sub-strands. Each strand/sub-strand is important. The relative weighting of each strand in a programme will vary from programme to programme. The weighting will be determined by many factors, including for example, the practical nature of a programme, or otherwise.

Each strand/sub-strand should be addressed appropriately in every programme. Where a programme is multidisciplinary or inter-disciplinary in nature, the use of more than one standard may be necessary. In such cases, the scope, depth and balance of knowledge, skill and competence should be attended to.

The titles of awards made by QQI on foot of these award standards shall be consistent with QQI Policy on the Making of Awards with an exception in the case of major awards where the named award stem shall have the following form: 'Level X Certificate in Lifelong Learning in' [specialisation].

These standards are determined by QQI under section 49(1) of the Qualifications (Education and Training) Act 2012.

## AWARD STANDARDS – AQUACULTURE AT NFQ LEVELS 3 TO 4

### Purpose

The purpose of this broad award standard is to enable design of a variety of programmes enabling the learner to develop the relevant knowledge, skill and competence in aquaculture at NFQ Level 3 and 4.

**Note: The indicators at each level build on the skills from the previous one.**

The outcomes at each NFQ level include those of all the lower levels in the same sub-strand unless stated otherwise.



## KNOWLEDGE

| NFQ                                       | LEVEL 3  | LEVEL 4   |
|---|--|---|
| Knowledge breadth                         | Knowledge moderately broad in range  | Broad range of knowledge  |
| Knowledge kind                            | Mainly concrete in reference and with some comprehension of relationship between knowledge elements  | Mainly concrete in reference and with some elements of abstraction or theory  |
|   | The learner should be able to show the following:  | The learner should be able to show the following:   |
| <b>Aquaculture industry &amp; science</b> | <p>Knowledge of:</p> <ul style="list-style-type: none"> <li>the aquaculture industry in Ireland (including basic processes associated with farming fish, shellfish and seaweed)</li> <li>the difference between freshwater and seawater aquaculture</li> <li>the layout of a finfish sea farm, a shellfish farm and a seaweed farm</li> <li>fish species used in aquaculture in Ireland</li> <li>the lifecycle of a finfish, a shellfish and a seaweed species farmed in Ireland</li> <li>animal welfare and the importance of reducing stress in the lifecycle of fish and shellfish</li> <li>the basic equipment used in freshwater and seawater aquaculture</li> <li>the importance of record-keeping in aquaculture</li> <li>the essential biosecurity measures for an aquaculture business.</li> </ul> <p>* Finfish includes all fish other than crustaceans, echinoderms (like sea urchins), molluscs, shellfish and marine mammals.</p> | <p>Knowledge and understanding of:</p> <ul style="list-style-type: none"> <li>the aquaculture industry: its commercial effect, its sustainability, regulations and licensing</li> <li>selected companies within the Irish aquaculture industry and how they contribute to national output</li> <li>markets (for example, life stages and harvests) that are followed and the support available to those in aquaculture</li> <li>fish and fish species typically used in the global aquaculture industry</li> <li>the lifecycle of a finfish, a shellfish and a seaweed species farmed in Ireland and globally</li> <li>animal welfare disease, pests, predators and the importance of reducing stress in the lifecycle of the fish</li> <li>specific techniques used in aquaculture, like anaesthetising finfish or measuring sizes of shellfish</li> <li>the process of bringing a juvenile to harvest size</li> <li>the importance of rearing fish stocks in a stress-free way</li> <li>how to observe and describe how fish behave when they are stressed</li> <li>the importance of grading fish according to their feed ration, as well as growth and stress.</li> </ul> |



|   |  |  |
|---|--|--|
| <b>Environmental knowledge/Sustainability</b> | Knowledge of: <ul style="list-style-type: none"><li>• the immediate area around the aquaculture site and possible environmental effects of the site</li><li>• the interactions between the fish and seaweed being farmed and wild species in the local environment</li><li>• the effect of water movements, tidal, riverine and lacustrine and wave action on the site</li><li>• the importance of sustainability.</li></ul> | Knowledge and understanding of: <ul style="list-style-type: none"><li>• the importance of taking daily data readings, environmental metered readings and / or stock control information</li><li>• how weather and seasons affect the fish farm</li><li>• the effect of uneaten feed on the area around the net-pens</li><li>• why certain species can be fully farmed, and why other species are only partially farmed in particular locations</li><li>• commercial use of fish-farming and its impact on the environment</li><li>• the development of global sustainable aquaculture</li><li>• economic, social and employment possibilities in aquaculture</li><li>• environmental and other potential work risks</li><li>• the importance of managing and conserving water quality (aquaculture relies on water for success).</li></ul> |
| <b>Standards and regulations</b>              | Knowledge of: <ul style="list-style-type: none"><li>• the quality, security and presentation standards needed by consumers</li><li>• the responsibilities of those working in aquaculture fish, environment and the wider community</li><li>• health and safety standards and regulations.</li></ul>   | Knowledge and understanding of: <ul style="list-style-type: none"><li>• regulations and protocols that apply to the aquaculture industry.</li></ul>  |



## KNOWLEDGE

| NFQ   | LEVEL 3   | LEVEL 4   |
|---|---|---|
| Know-how and skill range                                    | Demonstrate a limited range or practical and cognitive skills and tools   | Demonstrate a moderate range of practical and cognitive skills and tools  |
| Know-how and skill selectivity                              | Select from a limited range of varied procedures and apply known solutions to a limited range of predictable problems   | Select from a range of procedures and apply known solutions to a variety of predictable problems  |
| <b>Carry out daily and routine aquaculture tasks safely</b> | <p>Able to:</p> <ul style="list-style-type: none"> <li>• carry out daily, routine tasks</li> <li>• carry out daily cleaning and maintenance tasks</li> <li>• work safely, using the correct materials, tools, and equipment in the right way for the set task (including wearing Personal Protection Equipment – PPE)</li> <li>• net fish in as stress-free a way as possible</li> <li>• be aware of early threats or danger to staff and to the site</li> <li>• operate machinery that is correct for the task in a safe way.</li> </ul> | <p>Able to:</p> <ul style="list-style-type: none"> <li>• carry out daily, routine tasks in line with regulations</li> <li>• work safely, in line with relevant biosecurity measures</li> <li>• safely handle and store chemicals or medicines</li> <li>• recognise early threats or danger to staff and to site</li> <li>• use machinery that is correct for the task in a safe way.</li> </ul> |
| <b>Observation and communication</b>                        | <p>Able to:</p> <ul style="list-style-type: none"> <li>• observe and communicate any changes in fish behaviour or any signs of ill health in shellfish or seaweed</li> <li>• inform colleagues and management of changes they have seen in the water environment in and around the aquaculture site</li> <li>• inform the correct person of any issues they notice or difficulties they have.</li> </ul>  | <p>Able to:</p> <ul style="list-style-type: none"> <li>• recognise changes in fish behaviour, weather conditions and other threats that may affect the aquaculture site</li> <li>• inform the right person of any issues they notice or difficulties they have</li> <li>• keep daily records of routine tasks.</li> </ul>   |



## KNOWLEDGE

| NFQ                | LEVEL 3  | LEVEL 4  |
|--------------------|--|--|
| Competence context | <b>Act within a limited range of contexts</b>  | <b>Act in familiar and unfamiliar contexts</b>   |
|                    | With support, take part effectively and safely within similar types of group, taking limited responsibility for their contribution within a managed aquaculture setting. | Learner can take part effectively and safely when working in a managed aquaculture setting. They can take responsibility for their contribution to a group where the group members are all working towards the same goals. |

## KNOWLEDGE

| NFQ             | LEVEL 3   | LEVEL 4   |
|-----------------|---|---|
| Competence role | <b>Act under direction with limited autonomy; function within familiar, homogenous groups.</b>  | <b>Act with considerable amount of responsibility and autonomy</b>  |
|                 | Be aware, when working in natural sciences, of their responsibilities to colleagues, the wider community and the natural environment. | Be aware of the responsibility when working in natural sciences of the effect of their work on colleagues, the wider community and the natural environment. |



## KNOWLEDGE

| NFQ                          | LEVEL 3  | LEVEL 4  |
|------------------------------|--|--|
| Competence learning to learn | <b>Learn to learn within a managed environment</b>           | <b>Learn to take responsibility for own learning within a supervised environment</b>   |
|                              | Use curiosity and insight to learn within a managed setting. | Learners should be open to learning opportunities and support. They should take responsibility for their personal and learning development within the aquaculture environment. |

## KNOWLEDGE

| NFQ                | LEVEL 3   | LEVEL 4  |
|--------------------|---|--|
| Competence insight | <b>Assume limited responsibility for consistency of self-understanding and behaviour</b>  | <b>Assume partial responsibility for consistency of self-understanding and behaviour</b>                 |
|                    | Be aware of environmental risks associated with work activities.<br><br>Learners take responsibility for their behaviour when learning and using new aquaculture work skills. | Show respect for all and understand the need to act professionally when working in aquaculture settings. |





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