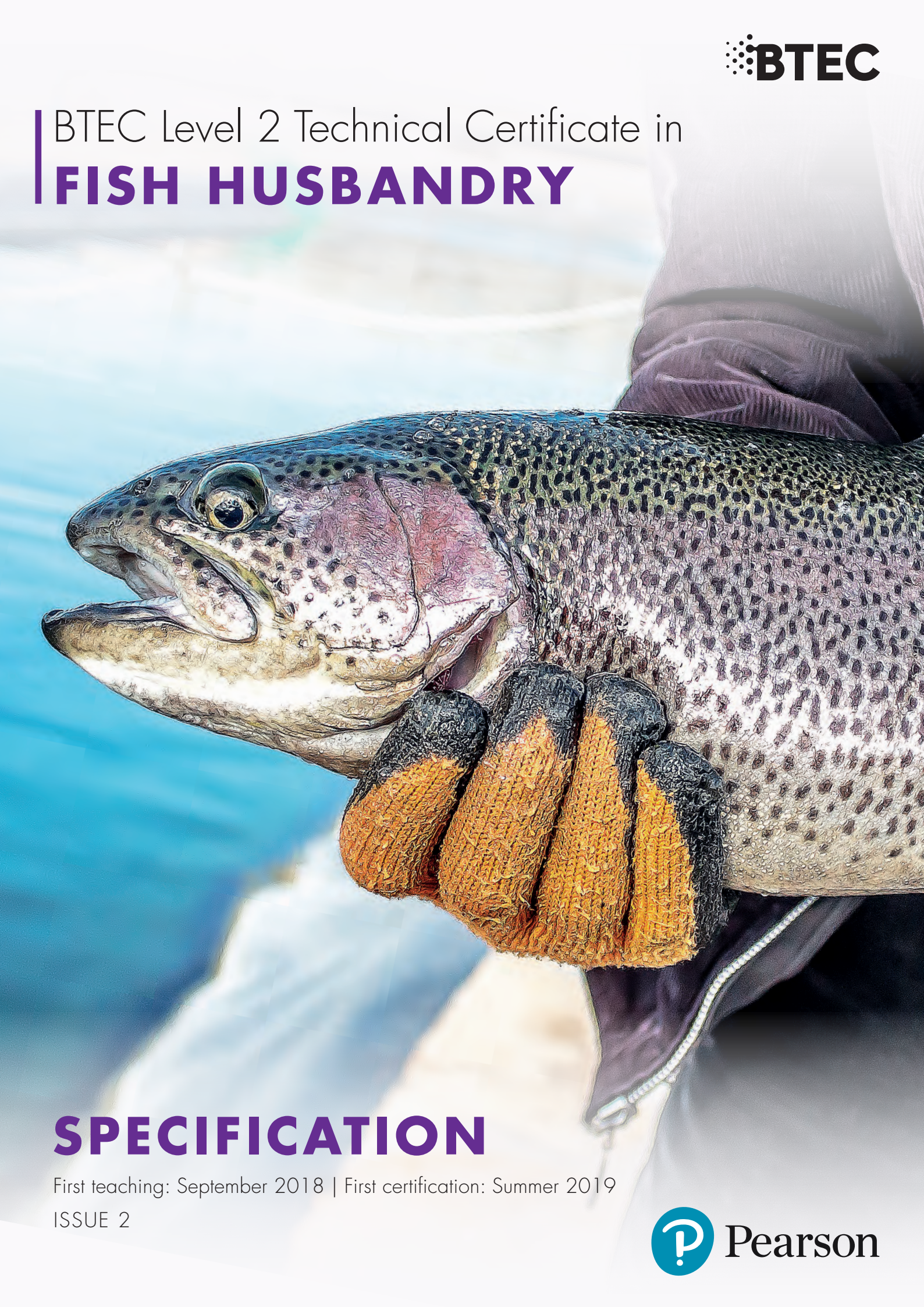
BTEC

BTEC Level 2 Technical Certificate in

FISH HUSBANDRY



SPECIFICATION

First teaching: September 2018 | First certification: Summer 2019

ISSUE 2

Pearson

Pearson BTEC Level 2 Technical Certificate in Fish Husbandry

Specification

First teaching September 2018
Issue 2

Edexcel, BTEC and LCCI qualifications

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This specification is Issue 2. We will inform centres of any changes to this issue. The latest issue can be found on the Pearson website: qualifications.pearson.com

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Welcome

With a track record built over 30 years of learner success, BTEC qualifications are widely recognised and respected. They provide progression to the workplace, either directly or via study at higher levels. Proof comes from YouGov research, which shows that 62% of large companies have recruited employees with BTEC qualifications.

Why are BTECs so successful?

BTECs embody a fundamentally learner-centred approach to the curriculum, with a flexible, unit-based structure. In these new BTEC Level 2 Technicals, the focus is on the development of technical, practical and transferable work-related skills, and sector-specific knowledge. The development of these skills is key for learners to progress to work or to an Apprenticeship.

When creating the BTEC Level 2 Technicals, we worked with employers to ensure that the qualifications meet their needs. Employers are looking for recruits with the appropriate technical knowledge, and technical and transferable skills essential for employment.

The BTEC Level 2 Technicals meet these requirements through:

- a range of occupationally-related qualifications, each with a clear purpose, so that there is a qualification to suit each learner's plan for career progression
- up-to-date content that is closely aligned with employers' needs for a skilled future workforce
- assessments chosen to help learners progress to the next stage. This means that some assessments are set by the centre to meet local needs, while others are set and marked by Pearson. This ensures that there is a core of skills and understanding common to all learners. For example, an externally-set test can be used to check that learners are confident in using technical knowledge to carry out a certain job.

We provide a wealth of support, both resources and people, to ensure that learners and their tutors have the best possible experience during their course. See *Section 11 Resources and support* for details of the support we offer.

A word to learners...

BTEC Level 2 Technicals will demand a lot of practical work from you. You will need to:

- complete a range of units
- be organised
- take some assessments that Pearson will set and mark
- take other assessments that will demonstrate your technical and practical skills
- keep a portfolio of your assignments.

But you can feel proud to achieve a BTEC because, whatever your plans in life – whether you decide to go on to work or to an Apprenticeship – success in your BTEC Level 2 Technical qualification will help you to progress to the next stage in your life.

Good luck, and we hope you enjoy your course.

Collaborative development

Learners completing their BTEC Level 2 Technicals will be aiming to go on to employment or to an Apprenticeship. It was essential, therefore, that we developed these qualifications in close collaboration with experts from professional bodies and businesses, and with the providers who will be delivering the qualifications. We are grateful to all the further education lecturers, tutors, employers, professional body representatives and other individuals who have generously shared their time and expertise to help us develop these new qualifications.

In addition, professional bodies and businesses have provided letters of support confirming that these qualifications meet their recruitment requirements. These letters can be viewed on our website.

Contents

Pearson BTEC Level 2 Technicals

Introduction

BTEC Level 2 Technicals are intermediate qualifications for post-16 learners who want to specialise in a specific occupation, occupational area or technical role. They prepare learners for work or an Apprenticeship by giving them the opportunity to develop sector-specific knowledge, technical and practical skills, and to apply these skills in work-related environments. The qualifications also provide progression to Level 3 Tech Level qualifications.

Developed in close conjunction with leading employers, BTEC Level 2 Technicals develop transferable workplace skills, such as good communication and the ability to work in a team, which employers have identified as essential for gaining employment in the sector and for progression once the learner is working.

At the core of these qualifications is the concept of preparing young people for the working world. Through practical activities and occupationally-fit-for-purpose assessments, learners will gain the skills and behaviours needed for sustainable employment.

BTEC Level 2 Technicals are designed to be used flexibly, depending on their size and scope:

- as part of a full-time 16–19 study programme, alongside mathematics and English GCSEs and/or Functional Skills, work placement and enrichment activities
- as the technical qualification within an Apprenticeship or off-the-job training for those already in work
- as a roll-on, roll-off programme for those entering an Apprenticeship or employment.

Pearson has developed the BTEC Level 2 Technicals suite to meet the Department for Education (DfE) requirements for qualifications to be offered as Technical Certificates for 16–19 year-olds.

This specification contains the information you need to deliver the Pearson BTEC Level 2 Technical Certificate in Fish Husbandry QN 603/2289/5. The specification signposts you to additional handbooks and policies. It includes all the units for this qualification.

1 Pearson BTEC Level 2 Technical Certificate in Fish Husbandry

Purpose

Who is the qualification for?

This qualification is for you if you want to start a career in fish husbandry. It is designed for post-16 students and can be taken as part of a wider study programme. It is an ideal qualification if you are intending to progress directly to employment within fish husbandry or to a Fish Husbandry Apprenticeship.

What does the qualification cover?

This qualification has been developed in consultation with employers in the fish husbandry sector to ensure that you develop the skills and behaviours that will give you the best opportunity to be successful when applying for work.

There are four mandatory units that relate directly to the skills, knowledge and behaviours expected by employers in the fish husbandry sector. The areas you will cover include:

- Introduction to fish health and biology
- Introduction to fishery management
- Fish production
- Fish husbandry.

You will also enhance your broader skills in maths and English, which will be invaluable in supporting progression in other areas. In addition, you will develop transferable technical and practical skills in communication (working with colleagues, customers and clients), and research and project work (providing you with an opportunity to demonstrate your reflective practice by suggesting alternative approaches to a problem).

What could this qualification lead to?

Achieving this qualification will give you an advantage when applying for a job in fish husbandry. The types of role you will be ready for are:

- fish-farm worker
- fish husbandry worker
- fish technician.

When studied as part of a full study programme, this qualification also gives you a sound basis to progress further in the fish husbandry sector to a Level 3 qualification, such as a Pearson BTEC Level 3 National Diploma in Fish Husbandry.

About the fish husbandry sector

Fish husbandry is an exciting and rapidly growing industry that is looking for skilled and knowledgeable staff. The fish husbandry industry incorporates activities that occur in freshwater locations, i.e. rivers and reservoirs. These activities include freshwater angling, conserving and enhancing freshwater fish and habitats, and securing sustainable fisheries. The fish husbandry industry covers a diverse range of jobs from research biologist to those responsible for maintaining fish stock and aquariums. Roles can also be found at a variety of locations, including rivers, reservoirs, fish farms, aquariums and retail outlets.

2 Structure

Total Qualification Time (TQT)

For all regulated qualifications, Pearson specifies a total number of hours that it is estimated learners will require to complete and show achievement for the qualification: this is the Total Qualification Time (TQT). Within TQT, Pearson identifies the number of Guided Learning Hours (GLH) that we estimate a centre delivering the qualification might provide. Guided learning means activities such as lessons, tutorials, online instruction, supervised study and giving feedback on performance, that directly involve tutors and assessors in teaching, supervising and invigilating learners. Guided learning includes the time required for learners to complete external assessment under examination or supervised conditions.

In addition to guided learning, other required learning directed by tutors or assessors will include private study, preparation for assessment and undertaking assessment when not under supervision, such as preparatory reading, revision and independent research.

The Pearson BTEC Level 2 Technical Certificate in Fish Husbandry is a qualification that has:

- Total Qualification Time: 300 hours
- Guided Learning: 240 hours.

Centres should take note of these hours in planning their programme but should also use their professional judgement to determine the provision of guided learning and study time across the units.

Qualification structure

Learners are required to complete and achieve all mandatory units in the qualification.

Pearson BTEC Level 2 Technical Certificate in Fish Husbandry				
Unit number	**Unit title**	**GLH**	**Type**	**How assessed**
1	Introduction to Fish Health and Biology	**60**	Mandatory	External
2	Introduction to Fishery Management	**60**	Mandatory	Internal
3	Fish Production	**60**	Mandatory	Internal
4	Fish Husbandry	**60**	Mandatory	Internal Synoptic

This qualification has 100% mandatory content and 25% external assessment.

Qualification and unit content

Pearson has developed the content of this qualification in collaboration with employers and representatives from relevant professional bodies and further education providers. In this way, we have ensured that content is up to date and that it includes the knowledge, technical and practical skills and behaviours required to work in the sector and occupational area.

All units in this qualification are mandatory, which provides a balance of breadth and depth, ensuring that all learners develop the technical and practical skills required in the occupational area. Learners are then given the opportunity to develop a range of transferable skills and attributes expected by employers. It is expected that learners will apply their learning to relevant employment and sector contexts during delivery, and that they will have opportunities to engage meaningfully with employers.

BTECs have always required applied learning that brings together knowledge and understanding (the cognitive domain) with practical and technical skills (the psychomotor domain). This is achieved through learners performing practical, work-related tasks that encourage the development of appropriate work-related behaviours (the affective domain) and transferable skills. Transferable skills are those such as communication, teamwork, planning and completing tasks to a high standard, all of which are valued in the workplace.

Our approach provides rigour and balance and promotes the ability to apply learning immediately in new contexts.

Some of the units within the specification may contain references to legislation, policies, regulations and organisations, which may not be applicable in the country you deliver this qualification in (if teaching outside of England), or which may have gone out of date during the lifespan of the specification. In these instances, it is possible to substitute such references with ones that are current and applicable in the country you deliver subject to confirmation by your Standards Verifier.

Assessment

Assessment is designed to fit the purpose and objective of the qualification. It includes a range of assessment types and styles suited to skills and occupationally-based qualifications at this level.

External assessment

In this qualification, there is one external assessment, which assesses a unit that contributes 25% of the total qualification GLH. The external assessment for this qualification takes the form of an examination that includes a variety of questions that allow learners to apply their knowledge to several work-related contexts.

This method has been used to externally assess the unit because it is best suited to draw out the evidence to exemplify the expectations of the unit and to provide sufficient evidence of achievement of the purpose of the unit.

The external assessment is taken under specified conditions, then marked by Pearson and a grade awarded. Learners must achieve the externally-assessed unit at Pass grade or above to achieve the qualification. Learners are permitted to resit the external assessment once during their programme by taking a new assessment.

For further information on external assessment see *Section 7 External assessment*.

Internal assessment

Units 2, *3* and *4* are assessed through internal assessment. Internal assessment allows learners to apply technical knowledge and demonstrate mastery of practical and technical skills through realistic tasks and activities. This style of assessment promotes deep learning through ensuring the connection between knowledge and practice.

Internal assessment is through assignments that are subject to external standards verification. We provide suggestions in each unit for setting assignments. This means that you can adapt materials to your local contexts and assess assignments that provide the valid and rigorous final assessment for each unit.

You will make grading decisions based on the requirements and supporting guidance given in the units. Learners must achieve all the internally-assessed units at Pass grade or above to achieve the qualification. For further information on internal assessment, including resubmissions, see *Section 6 Internal assessment*.

Synoptic internal assessment

There is one internally-assessed unit that provides the main synoptic assessment for this qualification. This synoptic assessment is designed to take place towards the end of the programme and draws on the learning throughout. The design of this assessment ensures that there is sufficient stretch and challenge, enabling the assessment of sector-related knowledge and technical and practical skills at the end of the learning period.

The synoptic assessment for this qualification is based on *Unit 4: Fish Husbandry* and takes the form of practical demonstration of the day-to-day maintenance duties of a fish farmer on a fish holding site. The unit requires learners to consider and select content that will enable them to apply their knowledge and skills from *Units 1*, *2* and *3* in an integrated way to a realistic work situation. For *Unit 4*, learners undertake practical work to monitor water quality, feed and grade live fish. They will also observe fish health and ensure that appropriate biosecurity measures are observed by the site to minimise the risk and spread of diseases when breeding and transporting live fish. This draws together underpinning knowledge and understanding of fish health and biology, and the practical methods and techniques used when feeding, grading and transporting live fish. Learners will also demonstrate customer service skills when dealing with the various customers and clients who interact with the site.

In delivering the unit, you need to encourage learners to draw on their broader learning so that they are prepared for the assessment.

Language of assessment

Assessment of the internally- and externally-assessed units for this qualification will be available in English. All learner work must be in English. A learner taking the qualification may be assessed in British Sign Language where it is permitted for the purpose of reasonable adjustment. For information on reasonable adjustments see *Section 8 Administrative arrangements*.

Grading of the qualification

Achievement in the qualification requires a demonstration of depth of study in each unit, assured acquisition of the practical skills required for employment in the specific sector and successful development of transferable skills.

Units are assessed using a grading scale of Distinction, Merit, Pass and Unclassified. All units in the qualification contribute proportionately to the overall qualification grade.

The qualification is graded using a scale of P to D. Please see *Section 10 Understanding the qualification grade* for more details.

The relationship between qualification grading scales and unit grades will be subject to regular review as part of Pearson's standards monitoring processes on the basis of learner performance and in consultation with key users of the qualification.

Employer involvement

Employer involvement in the delivery and/or assessment of technical qualifications provides a clear 'line of sight' to work, enriches learning, raises the credibility of the qualification in the eyes of employers, parents and learners, and furthers collaboration between the learning and skills sector and industry.

You need to ensure that all learners have the opportunity to undertake meaningful activity involving employers during their course.

Examples of 'meaningful activity' include:

- structured work experience or work placements that develop skills and knowledge relevant to the qualification/industry
- project(s), exercise(s) and/or assessments/examination(s) set with input from industry practitioner(s)
- units delivered or co-delivered by an industry practitioner(s); this could take the form of masterclasses or guest lectures
- industry practitioners operating as 'expert witnesses' who contribute to the assessment of a learner's work of practice, operating within a specified assessment framework; this may be a specific project(s), exercise(s) or all assessments for a qualification.

Meaningful employer involvement, as defined above, must be with employers from the land-based sector and should contribute significantly to at least one mandatory unit.

For this qualification, the following unit has specified requirements for employer involvement in delivery and/or assessment.

- *Unit 4: Fish Husbandry* – it is strongly recommended that learners take part in work experience as the best way of enabling them to complete the unit and facilitate assessment. A simulation set in a realistic scenario may be used as an alternative to work experience, in which case centres must involve employers.

We have also provided suggestions in the units on how employers could become involved in the delivery and/or assessment of this qualification. These units are listed below:

- Unit 1: Introduction to Fish Health and Biology
- Unit 2: Introduction to Fishery Management
- Unit 3: Fish Production.

These are suggestions only and there will be other possibilities at local level. Centres may choose to use other approaches but must ensure that they meet the requirement for meaningful employer involvement as defined above. Centres must have an employer involvement plan in place at the start of the programme. It must detail their approach to employer involvement and how it will add value to the delivery and assessment of the qualification.

Each centre's approach to employer involvement will be monitored in two ways. It will be monitored at centre level as part of the annual quality-management review process and captured as part of the standards verification process that addresses centre strategy for delivery, assessment and quality assurance, when we will ask you to show evidence of how employer involvement is provided for all learners. You will need to show evidence in order to gain reporting clearance for certification. It will also be monitored at programme level as part of the standards verification process to confirm that plans for employer involvement meet the requirements of the specification. These approaches are designed to ensure that additional activities can be scheduled where necessary so that learners are not disadvantaged, see *Section 9 Quality assurance*.

3 Units

Understanding your units

The units in this specification set out our expectations of assessment in a way that helps you to prepare your learners for assessment. The units help you to undertake assessment and quality assurance effectively.

Each unit in the specification is set out in a similar way. There are two types of unit format:

- internally-assessed units
- externally-assessed units.

This section explains how the units work. It is important that all tutors, assessors, internal verifiers and other staff responsible for the programme read and are familiar with the information given in this section.

Internally-assessed units

Section	Explanation
Unit number	The number is in a sequence for the qualification.
Unit title	This is the formal title of the unit and appears on certificates.
Level	All units are at Level 2 on the national framework.
Unit type	This says if the unit is mandatory or optional for the qualification. See *Section 2 Qualification structure* for details.
Assessment type	This says how the unit is assessed – i.e. whether it is external, internal or synoptic internal. See *Section 2 Qualification structure* for details.
GLH	Units have a GLH value of 60. This indicates the numbers of hours of teaching, directed activity and assessment expected. It also shows the weighting of the unit in the final qualification grade.
Unit in brief	A brief formal statement on the content of the unit that is helpful in understanding its role in the qualification. You can use this in summary documents, brochures etc.
Unit introduction	This is designed with learners in mind. It indicates why the unit is important, how learning is structured and how learning might be applied when progressing to employment or higher education.
Learning aims	These help to define the scope, style and depth of learning of the unit. You can see where learners should be developing and demonstrating their skills or where they should be actively researching or reviewing.
Unit summary	This section helps tutors to see at a glance the main content areas against the learning aims and the structure of the assessment. The forms of evidence given are suitable to fulfil the requirements.
Content	This section sets out the required teaching content of the unit. Content is compulsory except when shown as 'e.g.'. Learners should be asked to complete summative assessment only after the teaching content for the unit or learning aim(s) has been covered.

Section	Explanation
Assessment criteria	Each learning aim has assessment criteria to explain the achievement required to obtain Pass, Merit and Distinction grades.
Essential information for assessment decisions	This information gives guidance for each learning aim or assignment of the expectations for Pass, Merit and Distinction standard. This section contains examples and essential clarification. It is important that this is used carefully alongside the assessment criteria.
Assessment activity	This section provides information, suggested scenarios and tasks for summative assessment activities.
Further information for tutors and assessors	This section gives you information to support the delivery and assessment of the unit.
Delivery guidance	This section offers suggestions of ways of delivering the unit. It offers ideas on practical activities in a sector context that can be used to help develop relevant skills and to encourage progress.
Essential resources	Any specific resources that you need to be able to teach and assess are listed in this section. For information on support resources see *Section 11 Resources and support*.
Links to other units	This section shows you the main relationships of units to other units. This can help you to structure your programme and make the best use of available materials and resources.
Employer involvement	This section gives you information on the units that can be used to involve learners with employers. This information will help you to identify the kind of involvement that is likely to be successful.

Externally-assessed units

Section	Explanation
Unit number	The number is in a sequence for the qualification.
Unit title	This is the formal title of the unit and appears on certificates.
Level	All units are at Level 2 on the national framework.
Unit type	This says if the unit is mandatory or optional for the qualification. See *Section 2 Qualification structure* for details.
Assessment type	This says how the unit is assessed – i.e. whether it is external, internal or synoptic internal. See *Section 2 Qualification structure* for details.
GLH	Units have a GLH value of 60. This indicates the numbers of hours of teaching, directed activity and assessment expected. It also shows the weighting of the unit in the final qualification grade.
Unit in brief	A brief formal statement on the content of the unit.
Unit introduction	This is designed with learners in mind. It indicates why the unit is important, how learning is structured and how learning might be applied when progressing to employment or higher education.
Summary of assessment	This sets out the type of external assessment used and the way in which it is used to assess achievement.
Assessment outcomes	These show the hierarchy of knowledge, understanding, skills and behaviours assessed. For tested units, they include information on how this hierarchy relates to command terms in sample assessment materials (SAMs).
Essential content	For externally-assessed units all the content is obligatory, the depth of content is indicated in the assessment outcomes and sample assessment materials (SAMs). The content will be sampled through the external assessment over time, using the variety of questions or tasks shown.
Grade descriptors	We use grade descriptors when making judgements on grade boundaries. You can use them to understand what we expect to see from learners at particular grades.
Key terms typically used in assessment	These definitions will help you to analyse requirements and to prepare learners for assessment.
Links to other units	This section shows the main relationships of units to other units. This section can help you to structure your programme and make the best use of available materials and resources.
Employer involvement	This section gives you information on the units that can be used to involve learners with employers. This information will help you to identify the kind of involvement that is likely to be successful.

Units

This section contains all the units developed for this qualification.

Unit 1: Introduction to Fish Health and Biology

Level: **2**

Unit type: **Mandatory**

Assessment type: **External**

Guided learning hours: **60**

Unit in brief

Learners study the knowledge needed for practical fish health and disease management.

Unit introduction

Why should you know about fish biology and health? When you work in the fish-production industry, for example in aquaculture, fisheries management, aquatics, it is important to be able to recognise and understand the relationship between biology, health and how fish grow and reproduce.

In this unit, you will learn to recognise a number of freshwater and marine fish species important in sport, food and ornamental fish production. You will study their lifestyles and natural habitats, and the features that allow them to adapt to their natural environment. You will examine the variety of biological systems in fish that interact to allow them to exist, grow and reproduce.
You will also examine the parasites and pathogens that can affect their health and production, and how these can be controlled to promote good fish health and welfare.

When you have completed this unit, you will have knowledge and understanding of the biology and health of fishes. This will be invaluable when working in the fish industry and will help you to progress to an Apprenticeship or to employment in a role such as an assistant at a fish farm or commercial fishery.

Summary of assessment

This unit is assessed using a paper-based exam, set and marked by Pearson. The exam contains different types of question and is worth 60 marks. The exam duration is 75 minutes. The assessment is available twice a year March and June. The first assessment is available in March 2019.

Sample assessment materials will be available to help centres prepare learners for assessment.

This unit is assessed under supervised conditions.

Assessment outcomes

AO1 Demonstrate knowledge and understanding of the features and principles of fish biology and health

Command words: define, describe, explain, give, identify, name, state

Marks: ranges from 1 to 4 marks

AO2 Analyse information about biological processes related to fish growth and health

Command words: calculate, describe, explain

Marks: ranges from 1 to 4 marks

AO3 Apply knowledge and understanding to assessing and responding to the health needs of fish

Command words: describe, discuss, explain, give, state

Marks: ranges from 1 to 6 marks

AO4 Make reasoned connections between fish biology and health in realistic scenarios

Command words: discuss

Marks: from 6 marks

Essential content

The essential content is set out under content areas. Learners must cover all specified content before the assessment.

A Fish species, health and welfare

Learners must be able to apply the contexts of ensuring good health of live fish used for food, sport and for ornamental purposes, in hatcheries, farms, and during transport and in flowing, still, freshwater and saltwater environments.

A1 Fish identification and features

Knowledge and understanding of characteristic recognition factors, external features and adaptation of freshwater and marine fish species.

- Characteristic recognition factors, external features and adaptations of freshwater and marine fish species.
- Freshwater and marine fish species:
  - brown and rainbow trout
  - Atlantic salmon
  - pike
  - carp – crucian, Koi
  - bronze bream
  - European eel
  - dace
  - roach
  - rudd
  - perch
  - tench
  - zander
  - goldfish
  - tetra
  - angelfish
  - flounder
  - bass
  - thick lipped mullet.
- Characteristic recognition factors:
  - colours and markings
  - appearance and habitats of different sexes and life stages
  - lifespans, weight and length ranges.
- Names, locations and functions of external features in fish:
  - eyes
  - lateral line
  - scales
  - opercula
  - fins
  - nares
  - barbules.

- Anatomical terms:
  - dorsal, ventral, anterior, posterior, lateral
  - cephalocaudal, caudocephalic
  - proximal, distal, mesial
  - head, trunk, tail.

A2 Best practice and regulation

Knowledge of best practice and responsibilities under current and relevant UK legislation relating to aquatic animal health.

- Considerations for housing and handling to prevent injury and spread of disease to handlers and fish to include:
  - space requirements
  - methods of transport – nets, bags, tanks/tankers
  - complying with biosecurity plans and measures.
- Record keeping and the reasons for it:
  - feed and feeding behaviour
  - parasites, pathogens and physical damage
  - reporting of notifiable diseases
  - routine inspection of fish and equipment
  - slaughter and natural mortality
  - stock performance
  - stock sources, certification and movement
  - storage and use of medicines and chemicals
  - veterinary intervention
  - water quality parameters and environmental monitoring.

B Biological functioning

Interpretation and application of relevant information relating to biological systems and health of the species named in content area A, as appropriate to food production, sport fish production and ornamental species.

B1 Sensory systems

Basic functions, components and processes involved in the sensory systems of fish linked to the interpretation of environmental stimuli, and the impact of this on suitable handling, feeding, housing and health.

- Structure and function of the general teleost eye:
  - cornea, iris, lens, sclera, choroid, retina.
- Pressure and vibration perception via the lateral line.
- Chemoreception via chemoreceptors, including its importance in migratory fish species.
- Perception and generation of electrical fields.
- Sound perception via innervated cilia.

B2 Digestion

Structure, functions and adaptations for gaining nutrition.

- Digestive systems in carnivorous, omnivorous and planktivorous fish:
  - mouth, teeth, gill rakers, oesophagus, stomach, pylorus, pyloric caeca, pancreatic tissue, liver, gall bladder, intestine, anus.
- Feeding mechanisms: suction, ram feeding, manipulation/biting.
- Common natural foods.

B3 Cardiovascular, respiratory and excretory systems

Purposes, structures, functions, adaptations and processes involved in circulation, exchange and excretion.

- Single circulatory system, including the heart, arteries, veins and capillaries.
- Portal circulation of the liver and kidneys.
- Relative positioning and blood flow to internal organs and external features.
- Water regulation and removal of ammonia in freshwater and saltwater species.
- Gills and gill components related to oxygen and carbon dioxide exchange, to include filaments, rakers and arches.

B4 Reproduction

Stages, conditions, handling techniques and timeframes for fish production.

- Reproductive system component locations and functions:
  - male – testes, deferent ducts, genital pore, spermatozoa
  - female – ovaries, oviducts, genital ducts, genital pore
  - behaviours and secondary sexual features seen during spawning season.
- Life cycles of spawning and live-bearing fish:
  - gamete formation, maturation, release and fertilisation
  - eggs, alevin, fry, parr, smolt and adult stages as appropriate to species
  - age of reproductive productivity
  - selective breeding for strength, size and colour varieties.
- Production:
  - brood stock
  - production cycle – salmon, carp and trout
  - manual stripping of eggs and milt
  - fry selection.

B5 Thermoregulation

Impacts of environmental temperature on normal function and strategies for maintaining ideal body temperature.

- Temperature ranges in degrees Celsius (°C):
  - tropical fishes – 22–26°C
  - cold water fishes – below 20°C.
- Optimum water temperatures for growth (°C):
  - rainbow trout – 13–15°C
  - brown trout – 12–14°C
  - Atlantic salmon – 11–13°C.
- Effects of changes to environmental temperature on production and health.
- Behavioural changes to regulate temperature.

B6 Movement and buoyancy

Locations, adaptation, functions and interactions of components of the teleost musculoskeletal system.

- Skeleton, to include:
  - cranium, vertebral column, neural spines, ribs
  - dentary, lachrymal, mandible, premaxilla, maxilla, operculum, quadrate, teeth
  - pectoral girdle, pelvic girdle, radial, fin rays
  - ligaments and tendons.
- Musculature:
  - cephalic, trunk and appendicular myotomes
  - white and red muscle.
- Lateral undulation.
- Swim bladder.

C Maintaining fish health

Interpretation and application of relevant information relating to health and productivity of the species named in content area A, as appropriate to food production, sport fish production and ornamental species.

C1 Fish health and productivity

- Techniques used to assess, monitor and maintain fish health, including manipulation of data; calculation using simple arithmetic; percentages; mean, median and mode from grouped and ungrouped data; graphical interpretation and the advantages and limitations of the techniques.
- Visual health checks – normal and abnormal features of fishes:
  - colouration
  - condition
  - fin size and appearance
  - appearance of scales and gills
  - swellings
  - gulping
  - behavioural changes (lively, moribund, not schooling, corkscrew).
- Purposes and outcomes of internal and external examinations.
- Measurement and use of data and graphs for health and productivity:
  - weight and length
  - age
  - growth and mortality rates
  - stocking density.
- Reasons for, signs and treatments of the following nutritional issues:
  - temporary overeating
  - obesity
  - starvation.

C2 Pathogens and parasites of fish

Causes, signs, prevention, treatment and control of diseases and infestations in affected fish species and when they should be reported.

- Viral and bacterial pathogens:
  - bacterial kidney disease (BKD)
  - epizootic haematopoietic necrosis (EHN)
  - epizootic ulcerative syndrome (EUS)
  - infectious haematopoietic necrosis (IHN)
  - infectious salmon anaemia (ISA)
  - koi herpes virus disease (KHV)
  - spring viraemia of carp (SVC)
  - viral haemorrhagic septicaemia (VHS).
- Visual identification of internal and external parasites:
  - Ligula intestinalis
  - Ergasilus spp
  - Diplostomum
  - Ichthyobodo (Costia)
  - Gyrodactylus salaris (GS)
  - Argulus spp
  - Caligus elongatus
  - Lepeophtheirus salmonis
  - Ichthyophthirius multifiliis.

C3 Aquatic biochemistry

Equipment and materials involved in preparing, testing, maintaining and correcting aquatic conditions and the causes and effects of chemical change on fish.

- Water quality:
  - visual indicators of poor water quality
  - causes of poor water quality, to include overstocking and overfeeding
  - importance of beneficial bacteria.
- Methods, purpose and need for filtration, aeration and heaters as appropriate to cold water and tropical fish.
- Manual and automated water testing, to include test strips and reagents.
- Ideal levels and ranges in parts per million (ppm) and milligrams per litre (mg/l) to include corrective actions to maintain ideal levels:
  - nitrite, nitrate and ammonia
  - heavy metals
  - phosphate
  - dissolved oxygen (DO)
  - dissolved solids
  - pH
  - water hardness.

C4 Biosecurity and disease control

The purposes, methods and processes involved in preventing, managing and monitoring disease and transmission.

- Disinfection and water-source quality control.
- Stock introduction, to include:
  - tank cycling
  - acclimatisation
  - stock sourcing and selection.
- Appropriate materials and timescales for biosecurity:
  - personal protective equipment (PPE)
  - quarantining
  - disinfection of transport, clothing, equipment.
- Medication administration methods, benefits and drawbacks:
  - water treatment
  - medicated feed
  - injection
  - topical application.
- Calculation of rates of infection, infestation and effectiveness of treatment using simple arithmetic, percentages, mean, median and mode from grouped and ungrouped data.

Grade descriptors

To achieve a grade learners are expected to demonstrate these attributes across the essential content of the unit. The principle of best fit will apply in awarding grades.

Level 2 Pass

Learners will be able to identify common freshwater and marine fish species, internal and external structures and systems, linking their features to their functions. They will be able to describe how some fish species are adapted to their habitats and the relevance of this to managing their health and welfare. Learners will demonstrate their knowledge and understanding of the effects of the aquatic environment, parasites and pathogens that can affect fish. They will be able to perform simple analyses of information relating to fish health and disease status. Learners will demonstrate an understanding of the requirements and ways for monitoring and controlling the spread of disease.

Level 2 Distinction

Learners will demonstrate a thorough understanding of the internal and external biological structures, features and processes in freshwater and marine fish species. They will be able to link this to the lifestyles and habitats of fish and how they function in good health. Learners will be able to apply this knowledge to a variety of contexts, demonstrating a good understanding of how to meet the needs of fish in production systems. Learners will be able to analyse and interpret data and information from realistic scenarios in a considered way to make reasoned judgements about the health status of fish species in different production systems. Learners will be able to link the signs, symptoms, preventions and treatment of parasites and pathogens, describing a range of ways in which biosecurity measures can be used to address the prevention and control of their spread in familiar and unfamiliar situations.

Key words typically used in assessment

The following table shows the key words that will be used consistently by Pearson in our assessments to ensure learners are rewarded for demonstrating the necessary skills.

Please note: the list below will not necessarily be used in every paper/session and is provided for guidance only.

Command or term	Definition
Calculate	Use mathematical skill to produce a numerical answer. For example 'Calculate the growth rate in cm/week...'.
Define	Learners state or describe the nature, scope or meaning of a subject as objective facts. For example 'Define the term "obesity"'.
Describe	Learners give a clear, objective account in their own words showing recall and, in some cases application, of the relevant features of and information about a subject. For example 'Describe how this vaccination is administered...'.
Discuss	Learners explore different aspects of a topic or issue through reasoning or argument. For example 'Discuss two factors affecting the health of...'.
Explain	Learners show they understand the origins, functions and objectives of a subject and its suitability for purpose. They give reasons to support an opinion, view or argument, with clear details. For example 'Explain one way the digestive system...'.
Give/State/Name	Learners express the condition of, or facts about, something definitely or clearly.
Identify	Usually requires some key information to be selected from a given stimulus/resource. For example 'Identify the bone...'.
Label	Learners name or provide key information about a stimulus material. For example 'Label the diagram…'.
Match	Sets of information, categories or examples must be linked.
Which/what/why/how	These terms appear in fixed-response questions in which learners select the correct answer from a set of options.

Links to other units

This unit assesses the underpinning knowledge in:

- Unit 2: Introduction to Fishery Management
- Unit 3: Fish Production
- Unit 4: Fish Husbandry.

Employer involvement

This unit would benefit from employer involvement in the form of:

- visiting a range of fisheries, fish farms and fish retailers to explore different methods of fish production and to see how fish health is assessed and maintained
- guest speakers to outline the relevance of understanding fish biology and health to successful fish production processes
- work experience to apply the concepts of monitoring, assessing and maintaining fish health in practical contexts.

Unit 2: Introduction to Fishery Management

Level: **2**

Unit type: **Mandatory**

Assessment type: **Internal**

Guided learning hours: **60**

Unit in brief

Learners will develop the understanding and practical skills needed to effectively maintain fish stocks and their habitats.

Unit introduction

Are you considering a career in the fisheries industry? If you want to work in the fishery - management sector, you will need to be able to monitor water quality, flows and levels and have the necessary practical skills to work with livestock. You will also need to have an awareness of the importance of biosecurity measures and protocols.

In this unit, you will gain the necessary practical skills and theoretical knowledge to be able to understand and carry out the basic day-to-day practices associated with fish management. You will study the ways in which water is affected by many different parameters and how they then affect the fish inhabiting the water. You will be able to carry out the appropriate tests on the water to ensure that the environment is suitable for its inhabitants. The practical management of water flows and levels will also be covered in this unit. Another vital area of understanding is the stocking of fish and the effects it can have on natural environments. You will be required to carry out stock assessments, calculate stocking densities and determine the impact it has on a fishery. Alongside this, you will identify the various predators of fish and the methods available to control them. The threat of disease is prevalent in the fisheries industry, so you will need to have an awareness and understanding of biosecurity procedures and practices as well as of the relevant legislation and regulations associated with them.

On completion of this unit, you will have gained sufficient knowledge, skills and understanding to be confident when working in an assistant role in still-water and river fisheries, fish farms and rearing units.

Learning aims

In this unit you will:

A Be able to maintain appropriate water quality

B Be able to maintain fish stocks and their environments

C Apply relevant regulation and biosecurity practices related to fisheries.

Unit summary

Learning aim	Key teaching areas	Summary of suggested assessment evidence
A Be able to maintain appropriate water quality	**A1** Impact of water quality parameters **A2** Water quality **A3** Water flow	Evidence can be gathered in various formats, including witness observation statements, observer sheets, accompanying images and videos, record sheets, practical logbooks and written assessments.
B Be able to maintain fish stocks and their environments	**B1** Stock maintenance and control **B2** Impact of stocking on the natural environment **B3** Common pests and predators and their impact on fisheries	
C Apply relevant regulation and biosecurity practices related to fisheries	**C1** Biosecurity practices relevant to fisheries **C2** Regulations for fisheries	

Key teaching areas in this unit include:

Sector skills	Knowledge	Transferable skills/behaviours
• Fish handling and welfare • Health and safety awareness • Fish health and behaviour • Water quality testing • Stock assessment methods • Stock calculations	• Water quality parameters and effects on fish • Biosecurity practices and protocol • Fishery regulations and legislation • Stock maintenance and management • Water level and flow control	• Thinking skills/adaptability • Problem solving • Management of information

Unit content

Knowledge and sector skills

Learning aim A: Be able to maintain appropriate water quality

A1 Impact of water quality parameters

Learners will know:

- effects of alkaline and acid water on fish and their environment
- relationship between temperature and dissolved oxygen
- relationship between temperature and fish metabolism
- sources of dissolved oxygen in water
- minimum tolerances to oxygen and the potential effects
- causes and sources of ammonia
- maximum tolerances to ammonia and the potential effects.

A2 Water quality

Learners will know how to:

- test for water quality parameters. including temperature, oxygen, pH, ammonia
- use test kits, strips and meters to:
  - record results, e.g. daily, weekly, trends
  - interpret results, e.g. impact on species
  - react to results, e.g. feeding, aeration
- recognise signs of poor or abnormal water quality, e.g. fish behaviour, uneaten food
- improve water quality, e.g. aeration, feeding, de-stocking, habitat management.

A3 Water flow

Learners will be able to:

- maintain different types of water inlets and outlets to control and manage water flow
- recognise types of outlets:
  - monk
  - sluice
  - screen
  - stream
  - spillway
  - hatch
  - stand pipe
- recognise types of inlets:
  - stream
  - diversion channel
  - screen
  - silt trap
  - borehole
- control water levels on still-water fisheries
- control water flow on running-water fisheries
- recognise hazards and dangers when managing water levels and flows, e.g. currents, depths, obstacles, personal protective equipment (PPE); lifejackets, waders, safety boots
- use relevant tools – scythe, rake, wading staff, fork.

Learning aim B: Be able to maintain fish stocks and their environments

B1 Stock maintenance and control

Learners will be able to:

- undertake stock assessment using an appropriate fish-removal method:
  - seine net
  - electric fishing
  - fyke net
  - rod and line
  - drain down
- calculate stocking density of a fishery
- record information from a stock assessment
- identify fishery objectives, e.g. match, specimen, commercial, put and take, wild, pleasure
- encourage natural recruitment in a fishery
- recognise and use tools and resources safely:
  - seine net
  - electric fishing equipment
  - fyke net
  - fishing tackle
  - pumps
  - siphons
  - boat
  - outboard motor
  - PPE, e.g. waders, lifejackets, kill cord.

B2 Impact of stocking on the natural environment

- Impact of overstocking a fishery on the stock and aquatic environment.
- Potential impact of introduction of alien species.
- Impact of habitat loss to fish species in a fishery.
- Biological indicator species in fisheries.

B3 Common pests and predators and their impact on fisheries

Learners will be able to identify predators and pests.

- avian predators:
  - cormorant
  - grey heron
  - kingfisher
- mammalian predators:
  - otter
  - mink
- pest species:
  - signal crayfish
  - brown rat
- signs of presence, e.g. faeces, tracks, damage on stock
- impact on fish stocks in a fishery, e.g. mortalities, feeding, growth, appearance, stress

- legislation and control methods:
  - fencing
  - shooting
  - trapping
  - poisoning
  - deterrents.

Learning aim C: Apply relevant regulation and biosecurity practices related to fisheries

C1 Biosecurity practices relevant to fisheries

Learners will know:

- reasons for undertaking biosecurity measures:
  - disease control
  - protect stock
  - health and safety
- how to recognise good biosecurity practices in fisheries, e.g. supply on nets, slings, unhooking mats, net and boot baths, drying of equipment
- the impact of poor biosecurity practices on fisheries, e.g. spread of disease, contamination, fish mortalities, loss of income, zoonosis
- biosecurity practices:
  - disinfect fish-holding equipment
  - disinfect angling equipment
  - disinfect fishery equipment
- biosecurity methods, for example:
  - immersion baths
  - quarantine and isolation
  - drying
  - disinfectants
- select, use and store resources safely and correctly:
  - foot baths
  - foot mats
  - sprays
  - net dips
  - types of disinfectants
  - PPE, e.g. gloves, eye protection, breathing apparatus.

C2 Regulations for fisheries

Learners will be aware of:

- site permits for fisheries:
  - Environment Agency
- fishery registration:
  - Centre for Environment, Fisheries and Aquaculture Science (Cefas)
- fish-introduction legislation and consent:
  - Import of Live Fish Act 1980 (ILFA)
  - Environment Agency
- Natural England
- fish removal legislation and consent:
  - Environment Agency.

Transferable skills

Thinking skills/adaptability

- Undertake risk assessments relevant to task.
- Adapt to changes in water flows and levels.
- Use practical skills relevant to changing scenarios.
- Act on water quality results.

Problem solving

- Develop the use of fish-capture methods.
- Demonstrate how to carry out the testing of water quality parameters.
- Develop the practical application of managing water flow and levels.

Management of information

- Interpret water quality data.
- Consider the environmental impacts of water flow/level control and stocking.
- Apply relevant regulations and legislation to fishery practices.

Assessment criteria

Pass	Merit	Distinction
Learning aim A: Be able to maintain appropriate water quality		
A.P1 Test for water quality parameters accurately, identifying their effects on fish.	**A.M1** Monitor water quality accurately using relevant tools and resources and suggest simple ways for improvement.	**A.D1** Monitor water quality, level and flow accurately, recording and interpreting results and justifying recommendations for improvement.
A.P2 Control and maintain water flows and levels safely, using tools.		
Learning aim B: Be able to maintain fish stocks and their environments		
B.P3 Undertake basic stock assessment using adequate tools and resources.	**B.M2** Undertake effective stock assessment using appropriate tools and resources, identifying the impact of stock assessment on the natural environment from the results of the stock assessment.	**B.D2** Undertake a comprehensive stock assessment and assess the environmental, predator and pest impact on fish stocks and the natural environment, suggesting improvements.
B.P4 Identify avian and mammalian predators and pests and appropriate control measures.		
Learning aim C: Apply relevant regulation and biosecurity practices related to fisheries		
C.P5 Identify good biosecurity practice and the impact of poor biosecurity practices.	**C.M3** Suggest improvements to biosecurity practices relevant to fisheries and fisheries legislation while demonstrating appropriate biosecurity operations.	**C.D3** Demonstrate comprehensive biosecurity operations, ensuring that relevant fishery legislation is observed, suggesting improvements to biosecurity practices.
C.P6 Demonstrate basic biosecurity operations using appropriate tools and resources.		

Essential information for assessment decisions

Learning aim A

For distinction standard, learners will:

- competently test and monitor water quality (minimum of three tests) over a given time period, keeping detailed readings of all the parameters
- competently interpret the water quality results commenting on water acid levels, temperature, oxygen, pH, ammonia
- provide a comprehensive explanation of how parameters affect water quality and recommend three ways to improve water quality, e.g. aeration, feeding, de-stocking
- provide clear and fluent comments on impacts on environment and fish of water parameters, e.g. alkaline and acid water affecting wild stock
- independently prepare, select and use the correct PPE and kit when testing water quality
- competently and correctly select the correct tools for maintaining water flows and levels.

For merit standard, learners will:

- follow the correct process in the monitoring, standard testing practices and recording of water quality
- monitor water quality standards, providing detailed comments to highlight a good level of understanding
- be able to identify the effect/impact of test results on the fish and environment
- correctly select and use PPE and tools with some tutor assistance when managing and maintaining water flows and levels
- suggest two ways that water quality can be improved based on the results of their testing.

For pass standard, learners will:

- carry out three basic water tests, showing basic understanding of the process involved to a satisfactory standard
- follow the correct process for working safely, be able to follow instructions to maintain and manage water flow and levels
- demonstrate basic knowledge and understanding of water-quality parameters and make relevant comments on its effect on fish.

Learning aim B

For distinction standard, learners will:

- provide clear and concise information on stock maintenance and control for a selected species
- competently calculate stocking density of a fishery using an appropriate fish-removal method, e.g. seine net, and provide comments on stock density
- demonstrate robust understanding of the predator and pest impacts on stock levels, commenting on factors such as mortalities, feeding, growth, appearance and stress
- demonstrate comprehensive knowledge and understanding of how stocking impacts on the natural environment
- provide articulate and well thought-out recommendations for improvements
- include information on relevant fishery legislation that has been met.

For merit standard, learners will:

- use appropriate methods of stock assessment by carrying out fish-removal techniques and assessing stock density
- competently undertake stock management and maintenance tasks independently and safely, selecting and using the appropriate PPE, tools and resources
- correctly carry out stock assessment with minimal instructions, providing comments on stock density
- provide articulate comments on the environmental impacts and welfare issues of stock on the natural environment, using the results of stock assessments.

For pass standard, learners will:

- correctly select and use PPE, tools and resources safely with tutor assistance to adequately maintain and control fish stock
- carry out basic stock assessment following instructions
- include details of how stocking impacts on the natural environment
- identify at least three examples of avian and mammalian predators, providing recommendations on how to control these predators.

Learning aim C

For distinction standard, learners will:

- proficiently demonstrate biosecurity operational practices, including disinfecting fish-holding equipment, angling equipment and fishery equipment
- provide robust knowledge and understanding when applying biosecurity practices on fisheries
- include clear comments that detail the impact of good and poor practices on the fisheries
- provide clear links between the biosecurity practices used by the fisheries and the different fishery legislation
- provide suggestions for improvements to biosecurity practice in a selected fishery, highlighting depth of knowledge of the subject and its relevance to fisheries and fishery legislation.

For merit standard, learners will:

- follow the correct process for biosecurity practices, giving clear explanations of these practices in relation to fisheries
- show clear understanding of biosecurity practices on fisheries, providing comments on the impact of good and poor practices on the fisheries
- provide detailed comments on different fishery legislation (minimum of two) related to biosecurity practices
- make clear, reasonable suggestions (minimum of two) for improvements to biosecurity practices.

For pass standard, learners will:

- identify at least three good biosecurity practices
- identify at least two examples of poor biosecurity practices
- work safely following instructions and with tutor assistance to undertake biosecurity operations
- select, and use with tutor help, PPE and resources when undertaking biosecurity operations.

Assessment activity

The summative assessment activity takes place after learners have completed their formative development. The activity should be practical, be set in a realistic scenario and draw on learning from the unit, including the transferable skills. You will need to give learners a set period of time and number of hours in which to complete the activity. *Section 6* gives information on setting assignments and there is further information on our website.

A suggested structure for summative assessment is shown in the *Unit summary* section, along with suitable forms of evidence. This is for illustrative purposes only and can therefore be adapted to meet local needs or to assess across units where suitable opportunities exist. The information in the *Links to other units* section will be helpful in identifying opportunities for assessment across units.

The following scenario could be used to produce the required evidence for this unit. Centres are free to use comparable scenarios or other forms of evidence provided that they meet the assessment requirements of the unit.

Suggested scenario

You have been approached by the fishery officer from a local angling club who is concerned that one of their fisheries has suffered a fall in catch returns as a result of declining stock levels. You have been tasked to identify the potential causes of the losses through water quality assessment and determine the impact that predators may have on the fishery. Part of your role should be to undertake a stock assessment at the fishery in order to provide an estimate of the current stock levels. Particular attention should be given to ensuring that the equipment used for the fish-stock assessment is disinfected correctly once it has been used. Advice should then be passed on to the fishery officer suggesting the best biosecurity practices for the future.

If a retake is necessary, an alternative example must be used. The following is an example of a retake assessment activity.

As above, with a different fishery being selected for the scenario.

Further information for tutors and assessors

Delivery guidance

The following are examples of practical activities and workshops that tutors could use when developing sector and transferable skills in the delivery of this unit. Wherever possible, practical activities should be used to help learners develop both personal and sector skills in preparation for the final assessment. These suggestions are not intended as a definitive guide to cover the full GLH of the unit.

Introduction to unit Learners could be taken on a guided tour of a successful local fishery to explore how a fishery functions on a day-to-day basis. Daily, weekly and seasonal maintenance practices and operations could be demonstrated or explained, with the importance of each explored. A factsheet or worksheet can accompany the tour, enabling the learner to glean information and act as a prompt for questioning. **Suggested time:** about 3 hours.
Activity: Water quality monitoring Once learners have been assigned a fish-holding facility (this could be a fishery), tutors should advise on a range of water quality parameters that require monitoring over a given period of time. Learners will be required to identify the parameters they are monitoring and the effects they may have on the fish. The water quality should then be monitored at regular intervals over a given period of time. A record of the results should be kept to allow interpretation of the results once the monitoring period is completed. **Suggested time:** about 6 hours.
Activity: Control of levels and flows Learners should visit a fish-holding facility (this could be a fishery or a fish farm) and undertake the maintenance of the water flow or levels. This could be to assist with another task, for example the harvesting of a fish-farm pond or draining water before a stock assessment. Where possible, flow control methods should include monks, standpipes, hatches, siphons or pumps. Tasks could also include the cleaning of inlet/outlet screens, silt traps or clearance work in the vicinity of inlets or outlets. **Suggested time:** about 6 hours.
Activity: Fish stock assessment Learners should be given the opportunity to undertake fish stock assessment on a selected fishery. Before the stock assessment, learners should visit or be shown aerial images of the fishery, along with a purpose of task, to allow them to decide on the most appropriate assessment method. If possible, learners should adjust water levels in the fishery to assist the stock assessment. Learners should then carry out the assessment using the predetermined method, recording the results of the survey. The results can then be used to estimate a stock density for the water. On completion of the task, all equipment should be disinfected and stored appropriately. **Suggested time:** about 8 hours.

Activity: Fishery practices

Learners should visit a fishery to undertake a review of the biosecurity and predator control measures that have been put in place. The threat from particular predators should be highlighted, with available legal control methods suggested. Learners should also give recommendations to biosecurity protocols and practices already in place. Where possible, learners should be given the opportunity to undertake biosecurity operations and predator control practices.

Suggested time: about 4 hours.

Essential resources

For this unit, learners will need access to:

- at least two fisheries
- at least one fish-holding facility with inlets and outlets
- water test kits/meters for oxygen, ammonia, temperature and pH
- appropriate equipment to undertake fish stock assessments.

Links to other units

This unit has strong links to:

- Unit 1: Introduction to Fish Health and Biology
- Unit 3: Fish Production.
- Unit 4: Fish Husbandry.

Employer involvement

This unit would benefit from employer involvement in the form of:

- guest speakers
- access to local fish farms
- access to local fisheries
- work experience
- business materials as exemplars
- support from local business staff as mentors
- local angling clubs and fishery managers.

Unit 3: Fish Production

Level: **2**

Unit type: **Mandatory**

Assessment type: **Internal**

Guided learning hours: **60**

Unit in brief

Learners develop skills and knowledge related to fish production, covering techniques and equipment, industry regulation, fish health and nutrition.

Unit introduction

Are you considering a career in one of the many branches of aquaculture in the UK or overseas? Finfish aquaculture is the production of any fish species for sale into the table, sport fishery or ornamental markets and it is a fast-growing industry in the UK and overseas. In many countries, fish production provides an important source of protein; it also generates employment opportunities and an export market for local economies.

There is a large range of aquaculture systems, practices and species. This unit will familiarise you with practical fish production and the associated skills and knowledge.

In this unit, you will develop an understanding of the range of methods used in fish production and the species most commonly farmed around the world. You will also learn about the legislative requirements of UK fish production and about the organisations that regulate the industry. You will be involved in practical aquaculture tasks related to feeding, capture, transport and the grading of fish as well as monitoring and working to ensure biosecurity, and will develop the skills needed to determine feed rations and growth rates.

On completion of this unit, you will have developed the skills that will enable you to carry out day-to-day operations in a range of fish-production settings. This might include farming trout or salmon in fresh water or salt water, warm-water farming of species such as tilapia or catfish, restocking, ornamental carp farming or the production of ornamental pond or aquarium fish.

Learning aims

In this unit you will:

A Understand finfish aquaculture

B Transport live fish for sale and restocking on farms, in fisheries or in retail outlets

C Feed and grade fish for sale.

Unit summary

<table>
<tr><th>Learning aim</th><th>Key teaching areas</th><th>Summary of suggested assessment evidence</th></tr>
<tr><td>A Understand finfish aquaculture</td><td>A1 Finfish aquaculture operations
A2 Finfish aquaculture systems
A3 The regulation of finfish aquaculture operations</td><td>An information booklet on the range and scope of aquaculture operations in the UK, to include observations from fish-farm visits with reflection, witness statements, photographs and other evidence of observations.</td></tr>
<tr><td>B Transport live fish for sale and restocking on farms, in fisheries or retail outlets</td><td>B1 Transport of live fish
B2 Biosecurity measures</td><td rowspan="2">Witness statements and photographic/audiovisual evidence to accompany written evidence of practical work carried out in fish-production settings.</td></tr>
<tr><td>C Feed and grade fish for sale</td><td>C1 Diets and feeding
C2 Preparation of feed and feeding fish
C3 Grade live fish</td></tr>
<tr><td colspan="3">Key teaching areas in this unit include:</td></tr>
<tr><th>Sector skills</th><th>Knowledge</th><th>Transferable skills/behaviours</th></tr>
<tr><td>• Ration preparation and fish feeding
• Fish transport
• Biosecurity good practice
• Fish handling and grading</td><td>• Simple ration calculation
• Fish capture and transport methods
• Disinfection of equipment and holding units
• Grading methods and techniques</td><td>• Communication
• Thinking skills/adaptability
• Management of information</td></tr>
</table>

Unit content

Knowledge and sector skills

Learning aim A: Understand finfish aquaculture

Learners understand the different types of aquaculture operations and systems available for different fish species. They will also understand how and why different aquaculture sites adopt and apply these operations and systems, and the relevant regulations that apply.

A1 Finfish aquaculture operations

- Water quality and environmental requirements of:
  - salmonids, to include temperature, dissolved oxygen and pH ranges
  - cyprinids, to include temperature, dissolved oxygen and pH ranges
  - warm-water aquaculture operation, to include temperature, dissolved oxygen and pH ranges.
- Aquaculture systems suited to these operations:
  - salmonids in stew pond/raceway, tank and cage systems
  - cyprinids in pond systems
  - warm-water aquaculture operation in recirculating systems.
- How the needs of the species being produced are met by the system being used, for example:
  - temperature control
  - maintenance of dissolved oxygen.

A2 Finfish aquaculture systems

- Key features of:
  - flow-through systems, e.g. level controls, flow control, aeration/oxygenation
  - recirculating systems, e.g. filtration, water circulation, temperature regulation
  - cage and pond aquaculture, e.g. soil type, draining down, refilling.
- Use of systems in relation to different species, for example:
  - flow-through systems, e.g. in stew pond/raceway in trout production
  - recirculating systems, e.g. in tilapia production
  - cage and pond aquaculture, e.g. in carp production.
- The advantages and disadvantages of different systems.

A3 The regulation of finfish aquaculture operations

Learners will develop an understanding of the roles and purposes of the different bodies and agencies that influence finfish aquaculture operations and their relevant regulations.

- Environment Agency:
  - regulation of fish movement, e.g. permission to move live fish, fish health checks
  - supplier permits, e.g. importing fish.
- Centre for Environment, Fisheries and Aquaculture Science (Cefas), e.g. registration of aquaculture businesses.
- Fish Health Inspectorate, e.g. health checks – prevention of introduction and spread of serious diseases in fish.
- Animal welfare, e.g. ensuring that farmed fish are reared to high standards, transported and slaughtered humanely.

Learning aim B: Transport live fish for sale and restocking on farms, in fisheries or in retail outlets

Learners develop the skills and techniques needed to transport live fish, observing the biosecurity measures to ensure the fishes are transported safely to minimise spread of diseases.

B1 Transport of live fish

- Preparation:
  - transport equipment, e.g. tanks, bags
  - aeration/oxygenation equipment, e.g. air stone, diffuser, compressor, compressed oxygen, nets, insulated containers for cold- or warm-water species
  - disinfect all equipment.
- Transportation:
  - catch fish for live transport
  - transfer fish to live transport systems.
- Observe fish for signs of injury or distress.
- Work safely at all times: appropriate footwear, correct manual handling, keeping work area clear of trip hazards, ensuring equipment is kept in safe conditions.
- Aeration oxygenation – correct method where necessary.

B2 Biosecurity measures

Learners need to demonstrate an awareness of the biosecurity measures that sites need to observe when transporting live fish and the effect of not adhering to these measures.

- Quarantine:
  - purpose of quarantine, e.g. screen new stock to minimise risk of disease
  - identify appropriate holding system to ensure isolation from other livestock
  - quarantine newly arrived stock to minimise risk of pathogen transfer.
- Visual fish health checks to include identifying signs of:
  - inappetence
  - listlessness
  - clamped fins
  - flashing
  - deformity
  - visible external parasites
  - sunken or bulging eyes.
- Disinfection of:
  - transport tank
  - holding unit
  - handling equipment.

Learning aim C: Feed and grade fish for sale

Learners develop the skills and techniques needed to feed and grade fish to ensure they achieve appropriate growth rates for sale into the table, restocking or ornamental markets.

C1 Diets and feeding

- Diet types and their uses:
  - high protein for predators such as trout and salmon, young and brood stock
  - carbohydrates for omnivores such as carp and tilapia.
- Ration:
  - calculation by percentage of biomass
  - appropriate to species – use of manufacturer's guidance
  - appropriate to life cycle stage – use of manufacturer's guidance.
- Feeding regimes:
  - hand feeding
  - machine feeding
  - little and often (omnivores) or larger discrete meals (predators).
- Growth rate:
  - sample weighing of fish
  - recording of weights
  - calculation of growth rate.
- Feed storage:
  - vermin proof
  - dry feed
  - appropriate temperature
  - identifiable rations by species/life cycle stage.

C2 Preparation of feed and feeding fish

- Preparation:
  - weigh rations accurately
  - label rations appropriately and store correctly according to the requirements of the ration (fresh, live or frozen diets)
  - select feeding equipment, e.g. scales, feed storage, scoops, automatic feeders, demand feeders, buckets, sealed containers etc.
- Feeding:
  - feed effectively with minimum waste and spillage
  - feed to appetite and cease feeding as fish show signs of satiety
  - observe and comment on feeding behaviour as part of effective feeding and visual health checking (inappetence may be a sign of ill health or of sexual maturation)
  - complete a risk assessment and work safely at all times.

C3 Grade live fish

- Grading equipment, e.g. nets, grading screens, fish pumps, automated graders, grading table/trolley buckets, tanks, anaesthetic.
- Personal protective equipment (PPE), e.g. gloves, mask, apron.
- Catch fish for grading.
- Grade fish according to job brief, such as gender, size, sexual maturity, quality.
- Observe graded fish for signs of injury or distress.
- Minimise stress and injury:
  - use of anaesthetic
  - organised work area to minimise handling time and danger of drops and falls
  - maintenance of equipment to ensure prompt processing.

Transferable skills

Communication

- Ensure good team working to provide best outcome for the transportation and feeding of live fish.

Thinking skills/adaptability

- Adapting work in order to meet requirements of a changing work environment.
- Ensure efficient handling of stock to minimise stress and risk of injury during transportation.
- Observe stock for signs of injury or distress.

Management of information

- Accurately recording and interpreting fish mortalities.
- Accurately record and interpret results of grading.

Assessment criteria

Pass	Merit	Distinction
Learning aim A: Understand finfish aquaculture		
A.P1 Identify aquaculture operations and systems, and the species cultured in these systems.	**A.M1** Describe how the aquaculture operations and systems used by the site meet the environmental requirements of the species produced.	**A.D1** Explain how the site uses specific aquaculture systems and relevant legislative obligations to meet the water quality and environmental requirements of the species being produced, suggesting improvements.
A.P2 Identify the roles and purposes of the different bodies that influence aquaculture operations and their relevant regulations.		
Learning aim B: Transport live fish for sale and restocking on farms, in fisheries or in retail outlets		
B.P3 Carry out basic preparation and transportation of live fish, using appropriate equipment.	**B.M2** Carry out appropriate preparation and transportation of live fish, showing competent use of equipment and following correct biosecurity measures.	**B.D2** Confidently and safely carry out effective preparation and transportation of live fish, showing efficient use of equipment and justifying the biosecurity measures used at the fish site.
B.P4 Identify biosecurity measures that need to be maintained when transporting live fish.		
Learning aim C: Feed and grade live fish for sale		
C.P5 Carry out basic food preparation and feeding of live fish, identifying the diets and feeding of different fish species.	**C.M3** Carry out appropriate food preparation, feeding and grading of specific live fish with reference to diet and feeding to support fish health and growth.	**C.D3** Confidently carry out effective food preparation, feeding and grading of live fish, justifying the diet type and ration used to support fish health and growth.
C.P6 Accurately grade fish for sale, ensuring that all steps are taken to minimise stress and injury.		

Essential information for assessment decisions

Learning aim A

For distinction standard, learners will:

- provide comprehensive and detailed information on the specific aquaculture system used by the site, and how it meets the environmental and water quality requirements of the species being produced
- provide robust knowledge and understanding of site obligations to ensure they meet the requirements of the different aquaculture agencies and their regulations
- provide a clear rationale for compulsory record keeping and the consequences of not meeting/adhering to record-keeping regulations
- recommend and justify appropriate improvements (minimum of two) to aquaculture operations and systems used by the site to improve environmental and water quality, requirements for the different fish species on site.

For merit standard, learners will:

- provide adequate information on how the aquaculture systems used by the site deliver appropriate water quality, including flow, water temperature and dissolved oxygen for the species being held
- provide a clear description of the species being kept on the site, including information on how the fish-holding system being used applies to the environmental needs of the fish species held
- provide a clear description of how the site ensures that it is meeting the requirements of the relevant aquaculture agencies and regulations.

For pass standard, learners will:

- provide basic information on the aquaculture systems suitable for salmonids and cyprinids with reference to the species cultured in these systems
- provide basic information on the need for regulation to ensure appropriate site registration, health checks and regulation of fish movement
- provide a basic list on the agencies that enforce these requirements.

Learning aim B

For distinction standard, learners will:

- confidently and competently demonstrate the preparation and transportation of live fish independently
- independently select and use appropriate capture and transport equipment to prepare fish for movement
- provide information that highlights understanding of the appropriate transport, aeration and oxygenation systems to use for the specific species
- carry out visual health checks to observe any signs of fish injury and distress
- carry out safe working practices, including keeping all work areas clear of trip hazards and wearing appropriate footwear
- provide an in-depth explanation on the biosecurity measures in place at the site, such as quarantine and disinfection procedures, justifying the biosecurity measures used.

For merit standard, learners will:

- demonstrate the safe use of transport equipment to prepare and transport live fish with minimal assistance
- correctly select and safely use capture and transport equipment to prepare fish for movement with minimal assistance
- carry out basic visual checks to observe some signs of fish injury and distress
- provide a detailed explanation of the biosecurity measures in place at the site, to include at least two importance of biosecurity in fish production.

For pass standard, learners will:

- demonstrate basic preparation and transportation of line fish, to include:
  - use of capture and transport equipment to prepare for movement with assistance
  - observation of signs of fish injury and distress
  - safe working practices are observed
- provide limited information on the biosecurity measures in place at the site and the importance of biosecurity in fish production.

Learning aim C

For distinction standard, learners will:

- independently carry out the preparation for fish feeding, e.g. selecting correct feeding equipment and regime to weight rations appropriate for fish species and life cycle stage
- create an in-depth fish-feeding plan for two aquaculture species that includes diet and rations, preparing and storing feed and minimising waste
- calculate accurate feed rations for the two selected species appropriate to the selected species and life cycle stage
- provide in-depth information on the feeding requirements for two different aquaculture species at different stages of their life cycle
- independently demonstrate the feeding of fish, confidently selecting appropriate feeding methods for use in the facility while observing the feeding behaviour of the fish
- confidently carry out grading of live fish, assessing how effective the feeding method and plan are in achieving fish suitability for sale.

For merit standard, learners will:

- undertake the preparation of fish feeding with minimal guidance
- provide details on a suitable diet and feeding, including rations and frequency for two different aquaculture species with some assistance
- provide basic information on the preparation and storing of feed, and minimising waste through good practice
- carry out simple calculations of feed rations with minimal assistance
- select appropriate feeding methods for use in the facility with assistance
- carry out adequate grading of fish and provide a link to the feeding plans.

For pass standard, learners will:

- undertake basic preparation of fish feeding with assistance, including a basic diet and feeding plan for one fish type and be able to store the feed
- provide basic information on the feeding requirements for one fish type, such as type and amount of feed
- demonstrate an understanding of the importance of correct feeding, the nature of diets suited to different species and the feeding regimes appropriate to that species or life cycle stage
- carry out basic grading of fish, e.g. calculating size.

Assessment activity

The summative assessment activity takes place after learners have completed their formative development. The activity should be practical, be set in a realistic scenario and draw on learning from the unit, including the transferable skills. You will need to give learners a set period of time and number of hours in which to complete the activity. *Section 6* gives information on setting assignments and there is further information on our website.

A suggested structure for summative assessment is shown in the *Unit summary* section, along with suitable forms of evidence. This is for illustrative purposes only and can therefore be adapted to meet local needs or to assess across units where suitable opportunities exist. The information in the *Links to other units* section will be helpful in identifying opportunities for assessment across units.

The following scenario could be used to produce the required evidence for this unit. Centres are free to use comparable scenarios or other forms of evidence provided that they meet the assessment requirements of the unit.

Suggested scenario

You have recently been employed as an assistant on a fish-production unit. A significant part of your job will involve assisting with the feeding and transportation of live fish so you will need to show an awareness of many elements of the process. This will include preparing ration appropriate to the fish being fed and according to the recommendations of the feed manufacturer.

A significant part of your job will involve the grading of fish. This will require you to catch fish in preparation for grading and then accurately grade them according to the specification given to you by your employer.

If a retake is necessary, an alternative example must be used. The following is an example of a retake assessment activity.

As above, with a different fishery being selected for the scenario.

Further information for tutors and assessors

Delivery guidance

The following are examples of practical activities and workshops that tutors could use when developing sector and transferable skills in the delivery of this unit. Wherever possible, practical activities should be used to help learners develop both personal and sector skills in preparation for the final assessment. These suggestions are not intended as a definitive guide to cover the full GLH of the unit.

Introduction to unit

Learners could visit a range of fish-production units to witness and participate in a range of husbandry operations. Best practice must be demonstrated at all times and an awareness of fish welfare should run alongside health and safety considerations. To encourage understanding of the tasks of feeding, grading, transport and maintaining fish health, as well as understanding the equipment and facilities employed in fish production, learners should be able to experience a wide variety of jobs. Observation skills and accurate working should be encouraged and developed.

The importance of legislation should also be highlighted.

Suggested time: about 3 hours.

Activity: Diet and feeding of fish

Learners might visit a fish farm of any type and observe and carry out the feeding of fish. They could use this time to ask industry professionals about the type and quality of feed, feeding methods and the calculation of rations.

Learners can also observe healthy feeding behaviour and use the opportunity to look for signs of less favourable feeding responses. They might extend their learning in this area by enquiring about feed costs and calculating the financial cost of a day's feeding in order to reinforce the importance of avoiding wastage.

The development of the skills and knowledge gained from this activity will enhance the employability of all learners. It will also utilise the transferable skills and knowledge from *Unit 1: Introduction to Fish Health and Biology* and *Unit 4: Fish Husbandry*.

Suggested time: about 6 hours.

Transport of live fish

Learners could visit a fish-farm site in order to observe and participate in the capture, handling and preparation of fish for live transport. Working alongside industry professionals, or with expert guidance, they can be encouraged to handle fish, making sure they minimise the risk of distress and injury. All tasks will need to be accomplished with health and safety as a key consideration.

Where appropriate, fish counting and weighing will be carried out and recorded, and fish inspected for physical condition.

Learners should be encouraged to select and prepare equipment and the worksite in readiness for capture and transport.

The development of these skills will apply across the full range of fish-production businesses and could be experienced in ornamental, restocking and table businesses. Learners will utilise the transferable skills and knowledge from *Unit 1: Introduction to Fish Health and Biology* and *Unit 4: Fish Husbandry*.

Suggested time: about 8 hours.

Grading of fish

Learners might work in any fish-production setting in order to observe and carry out fish-grading operations. This work could include grading by, for instance, gender, size, condition, sexual maturity or ornamental value. Learners should be encouraged to plan and prepare for the operation to ensure that the worksite is safe and healthy as well as ensuring that the grading work is carried out with due care for fish welfare.

Learners might work with different species or sizes/life cycle stages in order to develop a broader range of skills and knowledge. Support and guidance may be offered by industry professionals at the same time as encouraging learners to make decisions and grade fish correctly.

Grading is central to fish production and experience, and skills in this area will assist in the development of learners' employability. They will also utilise transferable skills and knowledge from *Unit 1: Introduction to Fish Health and Biology* and *Unit 4: Fish Husbandry*.

Suggested time: about 8 hours.

Activity: Maintenance of fish health

Learners will observe the health and welfare of fish when participating in their feeding and transportation.

Learners will be expected to demonstrate an awareness of the biosecurity measures in use and the selection of equipment, disinfection, quarantining and observation of fish for signs of stress, injury or ill health.

These considerations are of vast importance to all fish-production businesses and good practice should form a part of all activities.

Suggested time: about 4 hours.

Essential resources

For this unit, learners will need access to:

- a fish-production unit, e.g. restocking, table or ornamental (broodstock, hatchery or on-growing)
- fish-handling equipment
- appropriate feed stuffs.

Links to other units

This unit has strong links to:

- Unit 1: Introduction to Fish Health and Biology
- Unit 2: Introduction to Fishery Management
- Unit 4: Fish Husbandry.

Employer involvement

This unit would benefit from employer involvement in the form of:

- guest speakers to discuss the range and scope of their industry and the practical tasks involved in fish production within their particular branch/specialism
- work-placement opportunities in the industry to develop skills, knowledge and confidence, and to promote an awareness of the range of potential employment possibilities
- practical tasks to develop skills and promote an awareness of the breadth of employment possibilities in aquaculture.

Unit 4: Fish Husbandry

Level: **2**

Unit type: **Mandatory**

Assessment type: **Internal Synoptic**

Guided learning hours: **60**

Unit in brief

Learners will develop knowledge and practical industry skills to run a fish-production site that produces and supplies fish to the different markets.

In order to develop the understanding and skills covered in this unit, and to facilitate assessment, it is strongly recommended that learners take part in work experience on a fish-production site.

Unit introduction

Are you considering a future working with freshwater or marine fish at home or abroad? Fish production happens across the globe on a varying scale serving the three main fish industry sectors: the sports fishery, fish farming, and aquatics and ornamental industries. Each market has specific customers seeking particular fish products. This unit gives you the essential husbandry skills you need to care for and manage one of a variety of economically important species of fish. The unit also gives you customer service skills to help you to meet the needs of the individual market.

In this unit, you will develop fish husbandry skills such as breeding, feeding, on-growing, grading, observing, health checking, water quality sampling and unit maintenance, associated with producing a wide variety of species. In developing these commercial skills, you will learn the importance of good employee, employer and customer relations. You will develop the customer skills needed to be able to deal with suppliers and clients who interact with the fish-production site. As this is a synoptic unit, you will draw on your skills and knowledge developed in other units and will find that the tasks you undertake such as water quality testing and assessing fish health will link to work you have completed elsewhere in the qualification.

On completion of the unit, you will be able to look after a variety of fish, in line with industry practice. The grade and health of your stock will ensure a quality product for its intended market. Your appreciation of fish welfare and legislation will ensure maximum compliance and protection for the business ventures in which you are involved. The typical employment opportunities available to you at the end of the course are fish farmer, sports fishery operative and aquatic retailer.

Learning aims

In this unit you will:

A Undertake the preparation and maintenance of a fish-holding system

B Monitor data associated with fish rearing on a fish-production site

C Use customer service skills when dealing with customers and clients

D Understand the legislation and related statutory bodies associated with the fish-production site.

Unit summary

<table>
<tr><th>Learning aim</th><th>Key teaching areas</th><th>Summary of suggested assessment evidence</th></tr>
<tr><td>A Undertake the preparation and maintenance of a fish-holding system</td><td>A1 Maintenance of fish-holding site
A2 Health and welfare of fish
A3 Routine site maintenance
A4 Tools and resources</td><td rowspan="4">Evidence could include:
• logbooks/diary of practical tasks
• photographs
• witness/observation records
• calculations
• reports/risk assessments
• maps/plans/sketches/ diagrams.</td></tr>
<tr><td>B Monitor data associated with fish rearing on a fish-production site</td><td>B1 Fish-holding site data
B2 Use of data</td></tr>
<tr><td>C Use customer service skills when dealing with customers and clients</td><td>C1 Customer services skills
C2 Customer service tasks</td></tr>
<tr><td>D Understand the legislation and related statutory bodies associated with the fish-production site</td><td>D1 Site legislation</td></tr>
<tr><td colspan="3">Key teaching areas in this unit include:</td></tr>
<tr><th>Sector skills</th><th>Knowledge</th><th>Transferable skills/behaviours</th></tr>
<tr><td>• Fish handling
• Water quality testing
• Feed management
• Accessing risk
• Manual labour
• Customer skills</td><td>• Fish legislation
• Maths – multiplication, subtraction and percentages
• Basic estate skills
• Welfare and environmental issues</td><td>• Communication
• Working with others
• Management of information</td></tr>
</table>

Unit content

Knowledge and sector skills

Learning aim A: Undertake the preparation and maintenance of a fish-holding system

Learners prepare and maintain a fish-holding system, adapting their knowledge and skills to the fish species held on the site and appropriate to their selected market.

A1 Maintenance of fish-holding site

Learners need to demonstrate the ability to plan working practices on a daily, weekly and monthly basis, to ensure efficient production to meet market targets.

- Planning meetings, e.g. daily, weekly, monthly.
- Planning discussion, e.g. health and safety protocol, fish movements, biosecurity, grading, maintenance, transport, health checks, rotas, data and targets.
- Identifying daily, weekly, monthly and yearly duties, e.g. feeding, maintenance, testing.
- Allocation of roles, e.g. unit cleaning, site repairing, fish handling, site monitoring and customer liaison.
- Update on recent events, e.g. illnesses, diseases, irregularities.
- Performance review, e.g. group discussion, peer review, appraisal and assessment.

A2 Health and welfare of fish

Learners monitor the health and welfare of the fish on the farm/site for optimum growth and quality, and develop the ability to be able to treat these factors to ensure that fish are healthy and ready for sale.

- Health factors, e.g. carrying visual checks to identify disease, parasites, contamination and mortality, observing fish for signs of good and poor health, administering treatment of fish.
- Feeding factors, such as diet types, rations, regimes, growth rates, storage and overfeeding.
- Water quality, e.g. testing for nitrite, nitrate and ammonia, heavy metals, phosphate, dissolved oxygen (DO), dissolved solids, pH, water hardness.
- Biosecurity measures, e.g. disease control, protect stock.
- Fish grading and movement.

A3 Routine site maintenance

Learners need to develop the ability to carry out routine site maintenance, through common basic estate skills.

- Ensure adequate water supply, flow and level, with appropriate inlets, outlets, screens, hatches, monks and standpipes.
- Ensure adequate fish-holding facilities, e.g. flow through, recirculating, cage and ponds systems.
- Ensure adequate access to unit, e.g. path, road, track, bridge, gate or barrier.
- Ensure adequate surfaces, e.g. concrete, tarmac™, gravel, timber, non-slip products, woodchip, tiling, matting.
- Ensure adequate boundaries, e.g. hedges, fencing (including electric), barrier tape, walls, sleepers, netting.
- Ensure adequate structures, e.g. signage, working platforms, net dips, sheds, covers.

A4 Tools and resources

Learners need to be able to select, use and maintain the resources and tools needed to run a specific industry fish-production unit efficiently.

- Site materials, e.g. disinfectant, PPE, hand tools, cleaning equipment, pipes and hoses.
- Fish-farming supplies, e.g. feed, feeding equipment, nets, monitoring equipment, treatments, pumps, buckets, bins, storage tanks.
- Fish supplies, e.g. fry, on-growing fish, broodstock.

Learning aim B: Monitor data associated with fish rearing on a fish-production site

Learners apply their skills in recording and monitoring data over time to improve site performance and fish quality and quantity. Learners must be able to interpret the data recorded and implement production and site improvements.

B1 Fish-holding site data

- Welfare data, e.g. water quality, observations, health checks, treatments, mortality.
- Growth data, e.g. stock number, length–weight ratios, average weights, gross weights, feed input, catch records, ticket sales.
- Holding-system expenditure, e.g. feed, materials, fish, equipment.
- Income generated by the holding system, e.g. markets, demand, trade prices.

B2 Use of data

- Justify water treatment, disease treatment, alter feed regimes or stocking densities.
- Justify unit replacement, repair, adjustment or reallocation.
- Justify changes to operational practices, e.g. role allocation, daily, weekly or monthly routine.

Learning aim C: Use customer service skills when dealing with customers and clients

C1 Customer services skills

Learners apply their skills in interacting with a variety of customers and clients.

- Types of clients and customers:
  - suppliers and services, e.g. feed manufacturers, fishery equipment retailers, utility companies, building material merchants, pharmaceutical suppliers, veterinarian (vet) practices, government agencies
  - buyers, e.g. local retailers, wholesalers, supermarkets, online distributors, fish dealers, clubs, walk-in public, educational businesses, international companies.
- Customer service skills:
  - interacting with suppliers to place orders
  - customer relations
  - dealing with phone calls
  - managing social media
  - managing emails.

C2 Customer service tasks

- Taking and receiving orders – fish feed, medication, maintenance resources.
- Dealing with customers – individuals and wholesalers.
- Reporting incidents to relevant statutory bodies.
- Requesting vet visits.
- Selling products.

Learning aim D: Understand the legislation and related statutory bodies associated with the fish-production site

D1 Site legislation

Learners need to understand the legislation that relates to the site, knowing when and how to report significant incidents correctly, to ensure legislative compliance.

- Fishery/fish farm registration, e.g. Centre for Environment Fisheries and Aquaculture Science (Cefas) Registration, Cefas site permits.
- Fish movement, e.g. supplier permits, FR1 application forms.
- Health and safety, e.g. Health and Safety at Work etc. Act 1974 (auditing, health and safety, reporting health and safety, employee responsibilities, employer responsibilities).
- Animal welfare, e.g. Defra Transport Licences, Environment Agency (EA).
- Environment and conservation, e.g. Wildlife and Countryside Act 1981.
- Industry-specific codes of practice, e.g. Code of Good Practice Scottish Finfish Aquaculture, Institute of Fisheries Management (IFM) Code of Good Practice for Freshwater Fisheries Management, Ornamental Aquatic Trade Association (OATA), Pet Code of Practice.

Transferable skills

Communication

- Working with others when carrying out routine tasks, ensuring that tasks are allocated appropriately.
- Dealing with customers and clients – i.e. suppliers and buyers effectively and efficiently.

Working with others

- Working with others when carrying out routine task on the fish-production site.

Management of information

- Store contact and financial information securely.
- Prepare feed rations and calculate growth rates.

Assessment criteria

Pass	Merit	Distinction
Learning aim A: Undertake the preparation and maintenance of a fish-holding system		
A.P1 Demonstrate basic planning and preparation of a fish-holding site, identifying relevant welfare factors.	**A.M1** Demonstrate competent preparation and routine maintenance of a fish-holding site, using appropriate tools and resources	**A.D1** Demonstrate comprehensive and effective preparation, and routine maintenance of a fish-holding site, recommending improvements to support future maintenance.
A.P2 Demonstrate basic maintenance of a fish-holding site, using appropriate tools and resources.		
Learning aim B: Monitor data associated with fish rearing on a fish-production site		
B.P3 Record essential fish- and site data relating to a fish- and fish-production site.	**B.M2** Monitor fish and site data, explaining how the data can be interpreted to improve product and site.	**B.D2** Monitor fish and site data accurately, recording and interpreting results and justifying recommendations for improvement of fish health and welfare and site performance.
B.P4.Identify the uses of recorded data in improving fish health and welfare and site performance.		
Learning aim C: Use customer service skills when dealing with customers and clients		
C.P5 Undertake basic customer service skills when carrying out tasks associated with the fish-production site.	**C.M3** Undertake adequate customer service skills when carrying out tasks associated with the fish-production site.	**C.D3** Confidently undertake effective customer service and communication skills when carrying out complex tasks associated with the fish-production site.

Learning aim D: Understand the legislation and related statutory bodies associated with the fish-production site		
D.P6 Outline the legislative requirements and the related statutory bodies that a fish-production site needs to comply with.	**D.M4** Describe the legislative requirements and the related statutory bodies that a fish-production site needs to comply with and the relevant reporting procedures and forms.	**D.D4** Evaluate the benefits of effective compliance with legislative requirements and related statutory bodies that the fish-production site needs to observe, including relevant reporting procedures and forms.

Essential information for assessment decisions

Learning aim A

For distinction standard, learners will:

- confidently and independently select and use appropriate PPE, tools, resources and materials when preparing and carrying out routine site maintenance such as improving water quality, repairing fish-holding facilities
- confidently monitor and maintain the health and welfare of the different fish stock kept on site, following work instructions safely
- competently carry out a minimum of four routine site maintenance tasks, following work instructions safely and to high industry standards, e.g. ensure adequate water supply, flow and level with appropriate inlets, outlets, ensure fish-holding sites are kept to high industry standards
- plan maintenance duties on site, based on tasks that are carried out monthly, weekly and daily
- allocate simple daily tasks to workers, based on priority and evaluate the work carried out, suggesting improvements to increase production on site.

For merit standard, learners will:

- independently monitor and maintain the health and welfare of the different fish stock kept on site, following work instructions safely
- carry out a minimum of four routine site maintenance tasks, following work instructions safely with moderate guidance, e.g. ensure adequate water supply, flow and level with appropriate inlets, outlets, ensure fish-holding sites are kept to a satisfactory industry standard
- plan maintenance duties on site, based on tasks that are carried out monthly, weekly and daily.

For pass standard, learners will:

- use appropriate PPE, tools, resources and materials with assistance when carrying out routine site maintenance
- work safely, following instruction and guidance when carrying out routine/simple site maintenance
- identify maintenance tasks that can be carried out monthly, weekly and daily
- follow instructions when monitoring and maintaining the health and welfare of the fish stock kept on site.

Learning aim B

For distinction standard, learners will:

- competently demonstrate in-depth knowledge and skills when recording and monitoring fish welfare and growth data independently
- competently and correctly test, monitor and interpret fish and site data over a given period of time, including water quality, fish health and growth data, income and expenditure of the holding system
- keep a correct and detailed record of all site data, using the data to provide a clear and fluent report on current site performance, with suggestions and justification for improvements (minimum of three) to site performance and fish quality and quantity.

For merit standard, learners will:

- demonstrate adequate knowledge and skills when recording and monitoring fish welfare and growth data
- follow the correct processes to test, monitor and record fish and site data over a given period of time, with moderate guidance
- keep adequate records of some site data, including water quality and fish health and growth, providing details (minimum of two) that could lead to improvement in site performance and fish quality and quantity
- demonstrate acceptable skills of subject area when carrying out routine tasks and site maintenance, including the selection and use of correct tools and resources, knowing when to adjust changes to operational site practice and being able to improve water quality and fish health.

For pass standard, learners will:

- demonstrate basic knowledge and skills gained when recording and monitoring fish welfare and growth data; this could include basic health checks, weight and growth charts
- test and keep basic records of essential fish and site data, such as stock number and water quality, over a given period of time, with assistance
- demonstrate acceptable knowledge and skills of subject area when carrying out basic routine tasks and site maintenance, including using the correct tools and resources to carry out basic routine tasks.

Learning aim C

For distinction standard, learners will:

- competently demonstrate customer service skills when interacting with both suppliers and buyers
- demonstrate in-depth subject knowledge, good communication and customer service skills, when carrying out customer service tasks with different customers and clients.

For merit standard, learners will:

- demonstrate adequate customer service skills when interacting with both suppliers and buyers, with direction from supervisor
- demonstrate detailed subject knowledge, good communication and customer service skills when carrying out customer service tasks with customers and clients, with limited supervision and guidance.

For pass standard, learners will:

- demonstrate some customer service skills when interacting with both suppliers and buyers, with help from the tutor; skills must include, as a minimum, placing simple orders and dealing with basic phone calls
- carry out basic customer service tasks, to include interaction with customers face to face and by phone.

Learning aim D

For distinction standard, learners will:

- routinely follow site instructions safely and competently when dealing with legislation and statutory bodies. Learners know the reporting procedure for the different statutory bodies
- report a minimum of three incidents in detail correctly and clearly to the relevant body.

For merit standard, learners will:

- follow site instructions safely and adequately when dealing with some of the common legislation and statutory bodies, such as those for health and safety, and animal welfare, with limited guidance
- be able to report a minimum of two common incidents correctly to the relevant bodies, such as reporting health and safety incidents and obtaining suppliers' permits for fish movement.

For pass standard, learners will:

- follow site instructions safely, and with guidance, when dealing with legislation and statutory bodies
- identify some legislative bodies and be able to list some of the legislation related to the bodies.

Assessment activity

The summative assessment activity takes place after learners have completed their formative development. The activity should be practical, be set in a realistic scenario and draw on learning from the unit, including the transferable skills. You will need to give learners a set period of time and number of hours in which to complete the activity. *Section 6* gives information on setting assignments and there is further information on our website.

A suggested structure for summative assessment is shown in the *Unit summary* section, along with suitable forms of evidence. This is for illustrative purposes only and can therefore be adapted to meet local needs or to assess across units where suitable opportunities exist. The information in the *Links to other units* section will be helpful in identifying opportunities for assessment across units.

The following scenario could be used to produce the required evidence for this unit. Centres are free to use comparable scenarios or other forms of evidence provided that they meet the assessment requirements of the unit. This could be completed as part of your work experience.

Suggested scenario

You have recently been appointed as an employee responsible for a fish-holding unit. You are told to explain your job to an inspector from a statutory body. To assess good practice and appropriate representation of the industry to paying consumers, the inspector needs to be informed of day-to-day operations and customer relations. Your role is to on-grow the fish, while maintaining optimum health, grade and quality of your stock as well as to carry out routine maintenance of the unit. This active fish-husbandry operation is to run with the highest level of industry practice and legislative compliance.

Your job will need the following skills: feeding, grading, checking health, water quality testing and site and equipment maintenance. You will also record data and interact with customers and suppliers.

If a retake is necessary, an alternative example must be used. The following is an example of a retake assessment activity.

The same as the scenario above but your position will be that of assistant aquarium.

Further information for tutors and assessors

Delivery guidance

The following are examples of practical activities and workshops that tutors could use when developing sector and transferable skills in the delivery of this unit. Wherever possible, practical activities should be used to help learners develop both personal and sector skills in preparation for the final assessment. These suggestions are not intended as a definitive guide to cover the full GLH of the unit.

Introduction to unit Learners should visit a minimum of three different fish-holding units, each representing a different sector of the industry, i.e. sport, farming and aquatics. Learners will observe or participate in specialist industry practices that are evident at each of the contrasting sites. Learners will appreciate how basic husbandry practice is tailored for different species. They will also recognise differences in site design, site maintenance and site equipment. This will enable them to visualise how different products are produced for specific-market customers. **Suggested time:** about 6 hours.
Activity: Review fish-farm site plans Learners could review an existing fish farm with regard to design, maintenance and equipment. Ideally, learners would visit this site to relate design to its business operations. By considering its working practices, learners can explain how fish-husbandry requirements are met for this activity. **Suggested time:** about 3 hours.
Activity: Aquatic retailer guest visit An experienced aquatic or ornamental retailer could explain the importance of effective customer service in their sector of the industry. Drawing on their real-life experience in the workplace, the guest speaker can offer a dos and don'ts perspective. The guest speaker could also relay how typical customer service techniques can be tailored for other sectors of the industry. **Suggested time:** about 4 hours.
Activity: Research fish-production site legislation Learners can research the different legislation and the related statutory bodies to which sites have to adhere, with a view to establishing the importance of this legislation. This, in turn, will highlight the rights and responsibilities of the site. Looking at how the site meets key aspects of the legislation will enable learners to appreciate the benefits of compliance with legislation. Learners will also go through the reporting procedures and processes of each statutory body. **Suggested time:** about 5 hours.
Activity: Fish-industry pollution case Learners will participate in group research of a fishery or fish-farm pollution incident that has been publicised by the authorities, e.g. the Environment Agency. Learners will consider violations of current legislation and discuss the impact on fish welfare and the environment. The case can then be reviewed in terms of how the violations could have been avoided. **Suggested time:** about 3 hours.
Activity: Customer service skills Learners will participate in a customer service role-play activity, assessed by their peers and tutor. Learners will act out a typical fish-related customer and seller type scenario with their peers. They will have the opportunity to develop retail service skills and play the role of a customer. The role-play experience will give learners a greater appreciation of the commercial side of the industry in which they are looking to make a career. **Suggested time:** about 3 hours.

Essential resources

For this unit, learners will need access to:

- a fish-holding unit
- fish-farming equipment
- manual tools.

Links to other units

The table below illustrates how knowledge, understanding and skills from units across this qualification provide links to *Unit 4: Fish Husbandry*.

Unit	Synoptic links to Unit 4: Fish Husbandry
Unit 1: Introduction to Fish Health and Biology	• Using knowledge and understanding of fish health to recognise good and ill health. • Using techniques to assess monitor and maintain fish health. • Measuring and interpreting data such as weight, length, growth and mortality rates.
Unit 2: Introduction to Fishery Management	• Using understanding and skills of water quality to test water quality and recognise signs of poor and abnormal water quality. • Testing, calculating and interpreting water quality parameters such as temperature, oxygen, pH, dissolved oxygen. • Selecting and using correct tools and equipment to improve water quality. • Using understanding and skills to maintain and control fish stock. • Recognising good biosecurity measures adopted by fisheries.
Unit 3: Fish Production	• Using understanding and skills when transporting live fish. • Using skills and techniques when feeding and grading live fish. • Using appropriate tools and resources to feed fish – knowing the diet types, ration and feeding regime suitable for the different fish species. • Be able to calculate growth rate of fish.

Employer involvement

- Employers and relevant employment context must feature in the delivery of this unit.
- This unit would benefit from employer involvement in the form of suitable work experience. Where this is not feasible, simulations may be used. Employers must be involved in assessment of learners, for example through supporting the assessment process by giving feedback on the running and maintenance of the fish-production site.

4 Planning your programme

Is there a learner entry requirement?

As a centre, it is your responsibility to ensure that recruited learners have a reasonable expectation of success on the programme. There are no formal entry requirements but we expect learners to have qualifications at or equivalent to Level 1.

Learners are most likely to succeed if they have:

- three or four GCSEs at intermediate grades and/or
- BTEC qualification(s) achieved at least at Level 1
- at least Level 1 equivalent achievement in English and mathematics through GCSE or Functional Skills.

Learners may demonstrate ability to succeed in various ways. For example, learners may have relevant work experience or specific aptitude shown through diagnostic tests or non-education experience.

What is involved in becoming an approved centre?

All centres must be approved before they can offer this qualification – so that you are ready to assess learners and so that we can provide the support needed. Further information is given in *Section 8 Administrative arrangements*.

What level of sector knowledge is needed to deliver this qualification?

We do not set any requirements for tutors but expect centres to assess the overall skills and knowledge of the teaching team to ensure that they are relevant and up to date with current industry practice. This will give learners a rich programme to prepare them for progression.

What resources are required to deliver this qualification?

As part of your centre approval, you will need to show that the necessary material resources and workspaces are available to deliver the qualification. For some units, specific resources are required.

What makes good vocational teaching?

The approach to vocational teaching must be led by what is right for the particular sector. Therefore, each unit includes delivery guidance and suggested assessment tasks. Using the delivery guidance and suggested assessment tasks and our additional free delivery guidance and assignment briefs, you can build a course that contextualises learning in real-life and/or employment scenarios. This will naturally draw in the kind of broader attributes valued in the sector, for example teamwork, when carrying out day-to-day tasks on a fish holding site, as well as the more general skills needed in work that fit well with project-based learning, such as independent learning.

What are the requirements for meaningful employer involvement?

This qualification has been designed as a Technical Certificate qualification and as an approved centre you are required to ensure that during their study, every learner has access to meaningful activity involving employers. See *Section 2 Structure* and *Section 9 Quality assurance* for the requirements for employer involvement.

Support for employer involvement

It is important that you give learners opportunities which are of high quality and that are directly relevant to their study. We will support you in this through our guidance materials and by giving you examples of best practice. See *Section 11 Resources and support* for details of the support available, including the Work Experience Toolkit.

What support is available for delivery and assessment?

We provide a wealth of support materials, including schemes of learning, delivery plans, assignment briefs, additional papers for external assessments and examples of marked learner work.

To support you with planning your assessments, you will be allocated a Standards Verifier early in the planning stage. There will be extensive training programmes and support from our Subject Advisor team.

For further details see *Section 11 Resources and support*.

How will my learners become more employable through this qualification?

Learners will be acquiring the key technical and sector knowledge, and practical and technical skills that employers need. Employability skills, such as teamworking and communication, and completing realistic tasks have been built into the design of the learning aims and content. This gives tutors the opportunity to use relevant contexts, scenarios and materials to enable learners to develop a portfolio of evidence that demonstrates the breadth of their skills and knowledge in a way that equips them for employment.

5 Assessment structure

The Pearson BTEC Level 2 Technical Certificate in Fish Husbandry is assessed using a combination of *internal assessments*, which are set and marked by tutors, and an *external assessment*, that is set and marked by Pearson.

We have taken great care to ensure that the assessment method chosen is appropriate to the content of the unit and is in line with requirements from employers.

In developing an overall plan for delivery and assessment for the programme, you will need to consider the order in which you deliver units, whether delivery is over short or long periods and when assessment can take place.

One internally-assessed unit in the qualification is defined as synoptic (see *Section 2 Structure*). A synoptic assessment is one that a learner should take later in a programme and in which they will be expected to apply learning from a range of units. As such, you must plan the assignments so that learners can demonstrate learning from across their programme.

We have addressed the need to ensure that the time allocated to final assessment of internally- and externally-assessed units is reasonable so that there is sufficient time for teaching and learning, formative assessment and development of transferable skills.

In administering internal and external assessment, the centre needs to be aware of the specific procedures and policies that apply, for example to registration, entries and results. An overview with signposting to relevant documents is given in *Section 8 Administration arrangements*.

6 Internal assessment

This section gives an overview of the key features of internal assessment and how you, as an approved centre, can offer it effectively. The full requirements and operational information are given in the Pearson *Quality Assurance Handbook* available on our website. All members of the assessment team need to refer to this document.

For this qualification, it is important that you can meet the expectations of stakeholders and the needs of learners by providing a programme that is practical and applied. You can tailor programmes to meet local needs and use links with local employers and the wider vocational sector.

When internal assessment is operated effectively, it is challenging, engaging, practical and up to date. It must also be fair to all learners and meet national standards.

Principles of internal assessment

Our approach to internal assessment for this qualification offers flexibility in how and when you assess learners, provided that you meet assessment and quality assurance requirements. You will need to take account of the requirements of the unit format, which we explain in *Section 3 Units*, and the requirements for delivering assessment given in *Section 8 Administrative arrangements*.

Operating internal assessment

The assessment team

It is important that there is an effective team for internal assessment so that all assessment is planned and verified. For this qualification, it is likely that the team will be small but it is still necessary to ensure that the assessment process is followed. Full information is given in the Pearson *Quality Assurance Handbook*.

The key roles are:

- the Lead Internal Verifier (Lead IV) for the qualification has responsibility for the planning, record keeping and standard setting for the qualification. The Lead IV registers with Pearson annually and organises training using our support materials
- Internal Verifiers (IVs) check that assignments and assessment decisions are valid and that they meet our requirements. In a small team, all people will normally be assessors and IVs. No one can verify their own actions as an assessor
- assessors set or use assignments to assess learners to national standards.

Planning and record keeping

The Lead IV should make sure that there is a plan for assessment of the internally-assessed units and maintain records of assessment undertaken. The key records are:

- verification of assignment briefs
- learner authentication declarations
- assessor decisions on assignments, with feedback given to learners
- verification of assessment decisions.

Examples of records and further information are given in the Pearson *Quality Assurance Handbook*.

Effective organisation

Internal assessment needs to be well organised so that learners' progress can be tracked and so that we can monitor that assessment is being carried out in line with national standards. We support you through, for example, providing training materials and sample documentation. Our online myBTEC service can help support you in planning and record keeping. Further information on using myBTEC can be found in *Section 11 Resources and support* and on our website.

It is particularly important that you manage the overall assignment programme and deadlines to make sure that learners are able to complete assignments on time.

Learner preparation

To ensure that you provide effective assessment for your learners, you need to make sure that they understand their responsibilities for assessment and the centre's arrangements.

From induction onwards, you will want to ensure that learners are motivated to work consistently and independently to achieve the requirements of the qualification. Learners need to understand how assignments are used, the importance of meeting assignment deadlines and that all the work submitted for assessment must be their own.

You will need to give learners a guide that explains how assignments are used for assessment, how assignments relate to the teaching programme and how they should use and reference source materials, including what would constitute plagiarism. The guide should also set out your approach to operating assessment, such as how learners must submit work and request extensions.

You are encouraged to employ a range of formative assessment approaches before putting learners through to the assignments to formally assess the units. Formative assessment supports teaching and learning, and should be ongoing throughout the learning process. It enables tutors to enhance learning by giving learners constructive feedback so that they can identify their strengths and weaknesses, and to put measures in place to target areas that need work. Formative assessment approaches that incorporate reflective learning and regular skills assessment are important in encouraging self-development and reflective practice, to ensure that learners progress.

Setting assignments

An assignment is issued to learners as an assignment brief with a defined start date, a completion date and clear requirements for the evidence that they need to provide. This assignment will be separate from the practice and exploration activities that have been used during the learning period, and learners must understand that the assignment is being used to judge the learning aims. There may be specific, observed practical components during the assignment period. Assignments can be divided into tasks and may require several forms of evidence. A valid assignment will enable a clear and formal assessment outcome, based on the assessment criteria.

When setting your assignments, you need to work with the information given in the *Essential information for assessment decisions* and the *Assessment activity* sections of the units. You can choose to use the suggested scenarios or to adapt them to take account of local circumstances, provided that assignments are verified.

In designing your own assignment briefs you should bear in mind the following points.

- A learning aim must always be assessed as a whole and must not be spilt into two or more tasks.
- Assignments must be structured to allow learners to demonstrate the full range of achievement at all grade levels. Learners need to be treated fairly by being given the opportunity to achieve a higher grade if they have the ability.
- Learners should be given clear tasks, activities and structures for evidence; the criteria should not be given as tasks.
- You must ensure that assignments for synoptic assessment are designed to enable learners to draw on the specific units identified and demonstrate that they can identify and use effectively an appropriate selection of skills, techniques, concepts, theories and knowledge in an integrated way. Assignments for the synoptic unit will be monitored at programme level as part of the standards verification process to ensure that they encourage learners to select and apply their learning from across the qualification in an integrated way.
- Where there is a requirement for assessment to be conducted in the real work environment (mandatory work placement), assignments must be designed to facilitate this. Where there is no mandatory requirement for workplace assessment but learners will be in work placement or work experience settings as a part of the programme, then it would be worthwhile if these assignments were also designed for completion in the real work environment. You must ensure that the work placement or work experience setting gives learners the opportunity to achieve at all grade levels.

As assignments provide a final assessment, they will draw on the specified range of teaching content for the learning objective. The specified teaching content is compulsory. The evidence for assessment need not cover every aspect of the teaching content as learners will normally be given particular examples, case studies or contexts in their assignments. For example, if a learner is carrying out a practical performance, then they must address all the relevant range of content that applies in that instance.

An assignment brief should have:

- a vocational scenario or context that motivates the learner to apply their learning through the assignment
- an audience or purpose for which the evidence is being provided
- clear instructions to the learner about what they are required to do, normally set out through a series of tasks.

Forms of evidence

The units allow for a variety of forms of evidence to be used, provided that they are suited to the type of learning aim and the learner being assessed. For most units, the practical demonstration of skills is necessary. The units give you information on suitable forms of evidence that would give learners the opportunity to apply a range of transferable and sector skills. Centres may choose to use different suitable forms for evidence to those proposed. Overall, learners should be assessed using varied forms of evidence.

The main forms of evidence include:

- observation and recordings of practical tasks or performance in the workplace with supporting evidence
- projects
- recordings of role play, interviews and other types of simulated activity
- oral or written presentations with assessor questioning
- work logbooks and reflective journals.

It is important to note that an observation record is a source of evidence and does not confer an assessment decision. It must be sufficiently detailed to enable others to make a judgement about the quality and sufficiency of the performance and must document clearly the rationale for the assessment decision. Observation records should be accompanied by supporting evidence, which may take the form of videos, audio recordings, photographs, preparation notes, learner logs and other similar types of record.

The form(s) of evidence selected must allow:

- the learner to provide all the evidence required for the learning aim(s) and the associated assessment criteria at all grade levels
- the learner to produce evidence that is their own independent work
- a verifier to independently reassess the learner to check the assessor's decisions.

Centres need to take particular care in ensuring that learners produce independent work.

Making valid assessment decisions

Assessment decisions through applying unit-based criteria

Assessment decisions for this qualification are based on the specific criteria given in each unit and set at each grade level. The way in which individual units are written provides a balance of assessment of sector-specific knowledge, technical and practical skills, and transferable skills appropriate to the purpose of the qualification.

Pass, Merit and Distinction criteria all relate to individual learning aims. The assessment criteria for a unit are hierarchical and holistic where, in satisfying the M criteria, a learner would also have satisfied the P criteria. The unit assessment grid shows the relationships of the criteria so that assessors can apply all the criteria to the learner's evidence at the same time.

Assessors must show how they have reached their decisions using the criteria in the assessment records. When a learner has completed all the assessment for a unit then the assessment team will give a grade for the unit. This is given according to the highest level for which the learner is judged to have met all the criteria. Therefore:

- to achieve a Distinction, a learner must have satisfied all the Distinction criteria (and all the Pass and Merit criteria); these define outstanding performance across the unit as a whole
- to achieve a Merit, a learner must have satisfied all the Merit criteria (and all the Pass criteria) through high performance in each learning aim
- to achieve a Pass, a learner must have satisfied all the Pass criteria for the learning aims, showing coverage of the unit content and therefore attainment at Level 2 of the national framework.

The award of a Pass is a defined level of performance and cannot be given solely on the basis of a learner completing assignments. Learners who do not satisfy the Pass criteria should be reported as Unclassified.

Making assessment decisions using criteria

As an assessor, you review authenticated learner work and make judgements on standards using the assessment criteria and the supporting information provided in units and training materials. The evidence from a learner can be judged using all the relevant criteria at the same time. The assessor needs to make a judgement against each criterion that evidence is present and sufficiently comprehensive.

Assessors should use the following information and support in reaching assessment decisions:

- the *Essential information for assessment decisions* section in each unit
- your Lead IV and assessment team's collective experience, supported by the standardisation materials we provide.

Once the team has agreed the outcome, a formal assessment decision is recorded and reported to learners. The information given:

- must show the formal decision and indicate where criteria have been met
- may show where attainment against criteria has not been demonstrated
- must avoid giving direct, specific instructions on how the learner can improve the evidence to achieve a higher grade.

Authenticity of learner work

Assessors must ensure that evidence is authentic to a learner through setting valid assignments and supervising them during the assessment period. Assessors must take care not to provide direct input, instructions or specific feedback that may compromise authenticity.

Once an assessment has begun, learners must not be given feedback that relates specifically to their evidence and how it can be improved, learners must work independently.

An assessor must assess only learner work that is authentic, i.e. learners' own independent work. Learners must authenticate the evidence that they provide for assessment through signing a declaration stating that it is their own work.

Assessors must complete a declaration that:

- the evidence submitted for this assignment is the learner's own
- the learner has clearly referenced any sources used in the work
- they understand that false declaration is a form of malpractice.

Centres can use Pearson templates or their own templates to document authentication.

During assessment, an assessor may suspect that some or all of the evidence from a learner is not authentic. The assessor must then take appropriate action using the centre's policies for malpractice. Further information is given in *Section 8 Administrative arrangements*.

Resubmission of improved evidence

An assignment provides the final assessment for the relevant learning aims and is normally a final assessment decision, except where the Lead IV approves one opportunity to resubmit improved evidence based on the completed assignment brief.

The Lead IV has the responsibility to make sure that resubmission is operated fairly. This means:

- checking that a learner can be reasonably expected to perform better through a second submission, for example that the learner has not performed as expected
- making sure that giving a further opportunity does not give an unfair advantage over other learners, for example through the opportunity to take account of feedback given to other learners
- checking that the learner will be able to provide improved evidence without further guidance and that the original evidence submitted remains valid.

Once an assessment decision has been given to the learner, the resubmission opportunity must have a deadline within 15 working days in the same academic year.

For assessment to be fair, it is important that learners are all assessed in the same way and that some learners are not advantaged by having additional time or the opportunity to learn from others. Therefore, learners who did not complete assignments by your planned deadline or an authorised extension deadline, if one was given for specific circumstances, may not have the opportunity to subsequently resubmit. Similarly, learners who submit work that is not their own should not be given an opportunity to resubmit.

The outcome of any resubmission of the assignment by the learner is then recorded as the final decision.

A learner who has not achieved their expected level of performance in the relevant learning aims **after resubmission** of an assignment may be offered a single retake opportunity using a new assignment. The highest grade that may be awarded is a Pass.

The Lead IV must authorise a retake with a new assignment only in exceptional circumstances and where it is necessary, appropriate and fair to do so. For further information on offering a retake opportunity you should refer to the *BTEC Centre Guide to Internal Assessment* available on our website. We provide information on writing assignments for retakes on our website (please go to www.btec.co.uk/keydocuments).

7 External assessment

A summary of the type and availability of external assessment for this qualification is given below. This external assessment assesses a unit that is 25% of the total qualification GLH and is weighted to contribute the same proportion of the overall qualification grade.

See the units and sample assessment materials for more information.

Unit	Type	Availability
Unit 1: Introduction to Fish Health and Biology	• Paper-based exam set and marked by Pearson. • 75 minutes. • 60 marks.	March and June First assessment March 2019

For *Unit 1: Introduction to Fish Health and Biology*, a paper-based-exam is available from March 2019. This test uses a range of question types, including examiner marked. As examinations have a full marking process, results for individual learners will be released once the process is complete and the time to issue results will vary.

We will provide annually, in our *Information Manual*, a detailed timetable for entries, assessment and results. Resits cannot be scheduled until a learner's result has been issued.

Learners must be prepared for external assessment by the time they undertake it. In preparing learners for assessment, you will want to take account of required learning time and opportunities for resits. Learners who take an external assessment and who do not perform as expected may have one further opportunity using a later external assessment.

Learners who attempt an external assessment twice will have the better of the grades achieved used in the final grade calculation for the qualification.

Units

The externally-assessed unit has a specific format, which we explain in *Section 3 Units*. The content of the unit will be sampled across external assessments over time through appropriate papers. The ways in which learners are assessed are shown through the assessment outcomes and grading descriptors.

Sample assessment materials

The externally-assessed unit has a set of sample assessment materials (SAMs) that accompanies the specification. The SAMs are there to give you an example of what the external assessment will look like in terms of the feel and level of demand of the assessment.

The SAMs show the range of possible activity types that may appear in the actual assessments and give you a good indication of how the assessments will be structured. While SAMs can be used for practice with learners, as with any assessment, the content covered and specific details of the activities will vary in each assessment.

This sample assessments can be downloaded from our website.

Conducting external assessments

Centres must make arrangements for the secure delivery of external assessments. You need to ensure that learners are aware that they need to work independently and that they are aware of the requirements for any external assessment.

Each external assessment has a defined degree of control under which it must take place. We define degrees of control as follows.

High control

This is the completion of assessment in formal invigilated examination conditions.

Further information on responsibilities for conducting external assessment is given in the document *Instructions for Conducting External Assessments*, available on our website.

8 Administrative arrangements

Introduction

This section focuses on the administrative requirements for delivering a BTEC qualification.
It will be of value to Quality Nominees, Lead IVs, Programme Leaders and Examinations Officers.

Learner registration and entry

Shortly after learners start the programme of learning, you need to make sure that they are registered for the qualification and that appropriate arrangements are made for internal and external assessment. You need to refer to our *Information Manual* for information on making registrations for the qualification and entries for external assessments.

Learners can be formally assessed only for a qualification on which they are registered. If learners' intended qualifications change, for example if a learner decides to choose a different pathway specialism, then the centre must transfer the learner appropriately.

Access to assessment

Both internal and external assessments need to be administered carefully to ensure that all learners are treated fairly and that results and certificates are issued on time to allow learners to progress to chosen progression opportunities.

Our equality policy requires that all learners have equal opportunity to access our qualifications and assessments, and that our qualifications are awarded in a way that is fair to every learner. We are committed to making sure that:

- learners with a protected characteristic (as defined by the Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and this achievement can be compared fairly to the achievement of their peers.

Further information on access arrangements can be found in the Joint Council for Qualifications (JCQ) document *Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational Qualifications*.

Administrative arrangements for internal assessment

Records

You are required to retain records of assessment for each learner. Records should include assessments taken, decisions reached and any adjustments or appeals. Further information can be found in our *Information Manual.* Records must be maintained as specified as we may ask to audit them.

Reasonable adjustments to assessment

To ensure that learners have fair access to demonstrate the requirements of the assessments, a reasonable adjustment is one that is made before a learner takes an assessment. You are able to make adjustments to internal assessments to take account of the needs of individual learners. In most cases, this can be achieved through a defined time extension or by adjusting the format of evidence. We can advise you if you are uncertain as to whether an adjustment is fair and reasonable. You need to plan for time to make adjustments if necessary.

Further details on how to make adjustments for learners with protected characteristics are given on our website in the document *Supplementary guidance for reasonable adjustment and special consideration in vocational internally assessed units*.

Special consideration

Special consideration is given after an assessment has taken place for learners who have been affected by adverse circumstances, such as illness. You must operate special consideration in line with our policy (see previous paragraph). You can provide special consideration related to the period of time given for evidence to be provided or for the format of the assessment if it is equally valid. You may not substitute alternative forms of evidence to that required in a unit or omit the application of any assessment criteria to judge attainment. Pearson can consider applications for special consideration only in line with the policy.

Appeals against assessment

Your centre must have a policy for dealing with appeals from learners. These appeals may relate to assessment decisions being incorrect or assessment being conducted unfairly. The first step in such a policy could be a consideration of the evidence by a Lead IV or other member of the programme team. The assessment plan should allow time for potential appeals after assessment decisions have been given to learners. If there is an appeal by a learner you must document the appeal and its resolution. Learners have a final right of appeal to Pearson but only if the procedures that you have put in place have not been followed. Further details are given in the document *Enquiries and appeals about Pearson vocational qualifications and end point assessment policy.*

Administrative arrangements for external assessment

Entries and resits

For information on the timing of assessment and entries, please refer to the annual examinations timetable on our website. Learners are permitted to have one resit of an external assessment.

Access arrangements requests

Access arrangements are agreed with Pearson before an assessment. They allow learners with special educational needs, disabilities or temporary injuries to:

- access the assessment
- show what they know and can do without changing the demands of the assessment.

Access arrangements should always be processed at the time of registration. Learners will then know what type of arrangements are available in place for them.

Granting reasonable adjustments

For external assessment, a reasonable adjustment is one that we agree to make for an individual learner. A reasonable adjustment is defined for the individual learner and informed by the list of available access arrangements.

Whether an adjustment will be considered reasonable will depend on a number of factors to include the:

- needs of the learner with the disability
- effectiveness of the adjustment
- cost of the adjustment; and
- likely impact of the adjustment on the learner with the disability and other learners.

Adjustment may be judged unreasonable and not approved if it involves unreasonable costs, timeframes or affects the integrity of the assessment.

Special consideration requests

Special consideration is an adjustment made to a learner's mark or grade after an external assessment to reflect temporary injury, illness or other indisposition at the time of the assessment. An adjustment is made only if the impact on the learner is such that it is reasonably likely to have had a material effect on that learner being able to demonstrate attainment in the assessment.

Centres are required to notify us promptly of any learners who they believe have been adversely affected and request that we give special consideration. Further information can be found in the special requirements section on our website.

Dealing with malpractice in assessment

Malpractice means acts that undermine the integrity and validity of assessment, the certification of qualifications, and/or that may damage the authority of those responsible for delivering the assessment and certification.

Pearson does not tolerate actions (or attempted actions) of malpractice by learners, centre staff or centres in connection with Pearson qualifications. Pearson may impose penalties and/or sanctions on learners, centre staff or centres where incidents (or attempted incidents) of malpractice have been proven.

Malpractice may arise or be suspected in relation to any unit or type of assessment within the qualification. For further details regarding malpractice and advice on preventing malpractice by learners, please see our *Centre guide for dealing with malpractice and maladministration in vocational qualifications*, available on our website.

The procedures we ask you to adopt vary between units that are internally assessed and those that are externally assessed.

Internally-assessed units

Centres are required to take steps to prevent malpractice and to investigate instances of suspected malpractice. Learners must be given information that explains what malpractice is for internal assessment and how suspected incidents will be dealt with by the centre. Our *Centre guide for dealing with malpractice and maladministration in vocational qualifications* gives full information on the actions we expect you to take.

Pearson may conduct investigations if we believe that a centre is failing to conduct internal assessment according to our policies. The above document gives further information, examples and details the penalties and sanctions that may be imposed.

In the interests of learners and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

Externally-assessed units

External assessment means all aspects of units that are designated as external in this specification, including preparation for tasks and performance. For these assessments, centres must follow the JCQ procedures set out in the latest version of *JCQ Suspected Malpractice in Examinations and Assessments* (www.jcq.org.uk).

In the interests of learners and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

Learner malpractice

Heads of Centres are required to report incidents of any suspected learner malpractice that occur during Pearson external assessments. We ask that centres do so by completing a *JCQ Form M1* and emailing it and any accompanying documents (signed statements from the learner, invigilator, copies of evidence, etc.) to the Investigations Team at pqsmalpractice@pearson.com. The responsibility for determining appropriate sanctions or penalties to be imposed on learners lies with Pearson.

Learners must be informed at the earliest opportunity of the specific allegation and the centre's malpractice policy, including the right of appeal. Learners found guilty of malpractice may be disqualified from the qualification for which they have been entered with Pearson.

Teacher/centre malpractice

Heads of Centres are required to inform Pearson's Investigations Team of any incident of suspected malpractice by centre staff, before any investigation is undertaken. Heads of Centres are requested to inform the Investigations Team by submitting a *JCQ Form M2(a)* with supporting documentation to pqsmalpractice@pearson.com. Where Pearson receives allegations of malpractice from other sources (for example Pearson staff or anonymous informants), the Investigations Team will conduct the investigation directly or may ask the Head of Centre to assist.

Incidents of maladministration (accidental errors in the delivery of Pearson qualifications that may affect the assessment of learners) should also be reported to the Investigations Team using the same method.

Heads of Centres/Principals/Chief Executive Officers or their nominees are required to inform learners and centre staff suspected of malpractice of their responsibilities and rights; see *6.15* of *JCQ Suspected Malpractice in Examinations and Assessments*.

Pearson reserves the right in cases of suspected malpractice to withhold the issuing of results and/or certificates while an investigation is in progress. Depending on the outcome of the investigation, results and/or certificates may be released or withheld.

We reserve the right to withhold certification when undertaking investigations, audits and quality assurances processes. You will be notified within a reasonable period of time if this occurs.

Sanctions and appeals

Where malpractice is proven, we may impose sanctions or penalties.

Where learner malpractice is evidenced, penalties may be imposed such as:

- mark reduction for external assessments
- disqualification from the qualification
- being barred from registration for Pearson qualifications for a period of time.

If we are concerned about your centre's quality procedures, we may impose sanctions such as:

- working with you to create an improvement action plan
- requiring staff members to receive further training
- placing temporary blocks on your certificates
- placing temporary blocks on registration of learners
- debarring staff members or the centre from delivering Pearson qualifications
- suspending or withdrawing centre approval status.

The centre will be notified if any of these apply.

Pearson has established procedures for centres that are considering appeals against penalties and sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from Heads of Centres (on behalf of learners and/or members or staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in our *Enquiries and appeals about Pearson vocational qualifications and end point assessment policy*, which is on our website. In the initial stage of any aspect of malpractice, please notify the Investigations Team by email via pqsmalpractice@pearson.com who will inform you of the next steps.

Certification and results

Once a learner has completed all the required units for a qualification, even if final results for external assessments have not been issued, then the centre can claim certification for the learner, provided that quality assurance has been successfully completed. For the relevant procedures please refer to our *Information Manual*. You can use the information provided on qualification grading to check overall qualification grades.

Results issue

Results for external assessment will be issued once marking is complete.

Qualification results will be issued once a learner has completed all components of the qualification and you have claimed certification. The result will be in the form of a grade. You should be prepared to discuss performance with learners, making use of the information we provide and post-results services.

Post-assessment services

Once results for external assessments are issued, you may find that the learner has failed to achieve the qualification or to attain an anticipated grade. It is possible to transfer or reopen registration in some circumstances. Our *Information Manual* gives further information.

Changes to qualification requests

Where a learner who has taken a qualification wants to resit an externally-assessed unit to improve their qualification grade, you firstly need to decline their overall qualification grade. You must decline the grade before the certificate is issued. For a learner receiving their results in August, you should decline the grade by the end of September if the learner intends to resit an external assessment.

Additional documents to support centre administration

As an approved centre, you must ensure that all staff delivering, assessing and administering the qualifications have access to this documentation. These documents are reviewed annually and are reissued if updates are required.

- Pearson *Quality Assurance Handbook*: this sets out how we will carry out quality assurance of standards and how you need to work with us to achieve successful outcomes.
- *Information Manual*: this gives procedures for registering learners for qualifications, transferring registrations, entering for external assessments and claiming certificates.
- *Lead Examiners' Reports*: these are produced after each series for each external assessment and give feedback on the overall performance of learners in response to tasks or questions set.
- *Instructions for the Conduct of External Assessments*: explains our requirements for the effective administration of external assessments, such as invigilation and submission of materials.
- Regulatory policies: our regulatory policies are integral to our approach and explain how we meet internal and regulatory requirements. We review the regulated policies annually to ensure that they remain fit for purpose. Policies related to this qualification include:
  - adjustments for candidates with disabilities and learning difficulties, access arrangements and reasonable adjustments for general and vocational qualifications
  - age of learners
  - centre guidance for dealing with malpractice
  - recognition of prior learning and process.

This list is not exhaustive and a full list of our regulatory policies can be found on our website.

9 Quality assurance

Centre and qualification approval

As part of the approval process, your centre must make sure that the resource requirements listed below are in place before offering the qualification.

- Centres must have appropriate physical resources (for example, equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualification.
- Staff involved in the assessment process must have relevant expertise and/or occupational experience.
- There must be systems in place to ensure continuing professional development for staff delivering the qualification.
- Centres must have in place appropriate health and safety policies relating to the use of equipment by learners.
- Centres must deliver the qualification in accordance with current equality legislation.
- Centres should refer to the teacher guidance section in individual units to check for any specific resources required.

Continuing quality assurance and standards verification

On an annual basis, we produce the Pearson *Quality Assurance Handbook*. It contains detailed guidance on the quality processes required to underpin robust assessment, internal verification and planning of appropriate employer involvement.

The key principles of quality assurance are that:

- a centre delivering BTEC programmes must be an approved centre, and must have approval for the programmes or groups of programmes that it is delivering
- the centre agrees, as part of gaining approval, to abide by specific terms and conditions around the effective delivery and quality assurance of assessment; it must abide by these conditions throughout the period of delivery
- Pearson makes available to approved centres a range of materials and opportunities, through online standardisation, intended to exemplify the processes required for effective assessment, and examples of effective standards. Approved centres must use the materials and services to ensure that all staff delivering BTEC qualifications keep up to date with the guidance on assessment
- an approved centre must follow agreed protocols for standardisation of assessors and verifiers, for the planning, monitoring and recording of assessment processes, and for dealing with special circumstances, appeals and malpractice.

The approach of quality-assured assessment is through a partnership between an approved centre and Pearson. We will make sure that each centre follows best practice and employs appropriate technology to support quality-assurance processes, where practicable. We work to support centres and seek to make sure that our quality-assurance processes do not place undue bureaucratic processes on centres. We monitor and support centres in the effective operation of assessment and quality assurance.

The methods we use to do this for BTEC Technical Certificate and Diploma qualifications include:

- making sure that all centres complete appropriate declarations at the time of approval
- undertaking approval visits to centres
- making sure that centres have effective teams of assessors and verifiers who are trained to undertake assessment
- undertaking an overarching review and assessment of a centre's strategy for ensuring sufficient and appropriate engagement with employers at the beginning of delivery of any BTEC programme(s)
- undertaking a review of the employer involvement planned at programme level to ensure its appropriateness at a time when additional activities can be scheduled where necessary
- assessment sampling and verification, through requested samples of assessments, completed assessed learner work and associated documentation
- an overarching review and assessment of a centre's strategy for delivering and quality assuring its BTEC programmes.

Centres that do not fully address and maintain rigorous approaches to delivering, assessing and quality assurance cannot seek certification for individual programmes or for the BTEC Technical Certificate and Diploma qualifications. An approved centre must make certification claims only when authorised by us and strictly in accordance with requirements for reporting.

Centres that do not comply with remedial action plans may have their approval to deliver qualifications removed.

10 Understanding the qualification grade

Awarding and reporting for the qualification

This section explains the rules that we apply in providing an overall qualification grade for each learner. The final grade awarded for a qualification represents a holistic performance across all of the qualification. As the qualification grade is an aggregate of the total performance, there is some element of compensation in that a higher performance in some units will be balanced by a lower outcome in others.

Eligibility for an award

In order to be awarded the qualification, a learner must complete all units and achieve a Pass or above in all units. See *Section 2 Structure* for full details.

To achieve the qualification grade, learners must:

- achieve and report a grade (D, M or P) for all units within a valid combination
- achieve the **minimum number of points** at a grade threshold.

Where there are optional units in a qualification, it is the responsibility of the centre to ensure that a correct unit combination is adhered to. Learners who do not pass all the required units shown in the structure will not achieve the qualification. For example, learners who have not passed the required externally-assessed unit or who have not taken enough mandatory units will not achieve that qualification even if they have enough points.

Calculation of the qualification grade

The final grade awarded for a qualification represents an aggregation of a learner's performance across the qualification. As the qualification grade is an aggregate of the total performance, there is some element of compensation in that a higher performance in some units may be balanced by a lower outcome in others.

In the event that a learner achieves more than the required number of optional units (where available), the mandatory units along with the optional units with the highest grades will be used to calculate the overall result, subject to the eligibility requirements for that particular qualification title.

The qualification is awarded at the grade ranges shown in the table below.

Qualification	Available grade range
Certificate	P to D

The *Calculation of qualification grade* table, which appears later in this section, shows the minimum thresholds for calculating these grades. The table will be kept under review over the lifetime of the qualification. In the event of any change, centres will be informed before the start of teaching for the relevant cohort and an updated table will be issued on our website.

Learners who do not meet the minimum requirements for a qualification grade to be awarded will be recorded as Unclassified (U) and will not be certificated. They may receive a Notification of Performance for individual units. Our *Information Manual* gives full details.

Points available for internally-assessed units

The table below shows the number of **points** available for internally-assessed units. For each internally-assessed unit, points are allocated depending on the grade awarded.

	Unit size
	60 GLH
U	0
Pass	16
Merit	24
Distinction	32

Points available for the externally-assessed unit

Raw marks from the externally-assessed unit will be awarded **points** based on performance in the assessment. The points scores available for the externally-assessed unit at grade boundaries are as follows.

	Unit size
	60 GLH
U	0
Pass	16
Merit	24
Distinction	32

We will automatically calculate the points for the externally-assessed unit once the external assessment has been marked and grade boundaries have been set. For more details about how we set grade boundaries in the external assessment please go to our website.

Claiming the qualification grade

Subject to eligibility, we will automatically calculate the qualification grade for your learners when the internally-assessed unit grades are submitted and the qualification claim is made. Learners will be awarded qualification grades for achieving the sufficient number of points within the ranges shown in the relevant calculation of qualification grade table for the cohort.

Calculation of qualification grade table

Certificate	
Grade	**Points threshold**
P	64
M	88
D	112

The table is subject to review over the lifetime of the qualification.
The most up-to-date version will be issued on our website.

Examples of grade calculations based on table applicable to registrations from September 2018

Example 1: Achievement of a Certificate with a P grade

Unit	GLH	Type	Grade	Points
1	60	External	Pass	16
2	60	Internal	Pass	16
3	60	Internal	Pass	16
4	60	Internal	Pass	16
	240		**P**	**64**

The learner has achieved a Pass or above in all units.

The learner has sufficient points for a P grade.

Example 2: Achievement of a Certificate with a D grade

Unit	GLH	Type	Grade	Points
1	60	External	Merit	24
2	60	Internal	Merit	24
3	60	Internal	Distinction	32
4	60	Internal	Distinction	32
	240		**D**	**112**

The learner has sufficient points for a D grade.

Example 3: Achievement of a Certificate with an Unclassified result

Unit	GLH	Type	Grade	Points
1	60	External	Merit	24
2	60	Internal	Merit	24
3	60	Internal	Unclassified	0
4	60	Internal	Pass	16
	240		**U**	**64**

The learner has a U in Unit 3.

The learner has sufficient points for a P but has not met the requirement for a Pass, or above, in all units.

11 Resources and support

Our aim is to give you support to enable you to deliver Pearson BTEC Level 2 Technicals with confidence. You will find resources to support teaching and learning, assessing, and professional development on our website.

Support for setting up your course and preparing to teach

Schemes of Learning

Our free Schemes of Learning give you suggestions and ideas for how to deliver the units in the qualifications, including opportunities to develop employability skills, tips on embedding mathematics and English, and how to link units through holistic assessments.

Delivery planner

High-level models showing how the course can be delivered over different timescales, for example six months, one year, two years.

myBTEC

myBTEC is a free, online toolkit that lets you plan and manage your BTEC provision from one place. It supports the delivery, assessment and quality assurance of BTEC qualifications in centres and supports teachers with the following activities:

- checking that a programme is using a valid combination of units
- creating and verifying assignment briefs (including access to a bank of assignment briefs that can be customised)
- creating assessment plans and recording assessment decisions
- tracking the progress of every learner throughout their programme.

To find out more about myBTEC, visit the myBTEC page on the support services section of our website.

Support for teaching and learning

Work Experience Toolkit

Our free Work Experience Toolkit gives guidance for tutors, assessors, work-based supervisors and learners on how to make the most of work placements and work experience.

Pearson Learning Services provides a range of engaging resources to support BTEC qualifications.

Teaching and learning resources may also be available from a number of other publishers. Details of Pearson's own resources and of all endorsed resources are on our website.

Support for assessment

Sample assessment materials for externally-assessed units

Sample assessment materials (SAMs) are available for externally-assessed units and can be downloaded from the Pearson Qualifications website. An additional set of sample assessment materials for externally-assessed units will also be available, giving your learners further opportunities for practice.

Sample assessment materials for internally-assessed units

We do not prescribe the assessments for the internally-assessed units. Rather, we allow you to set your own, according to your learners' preferences.

We provide assignment briefs approved by Pearson Standards Verifiers.

Sample marked learner work

To support you in understanding the expectation of the standard at each grade, examples of sample marked learner work will be made available on our website.

Training and support from Pearson

People to talk to

There are lots of people who can support you and give you advice and guidance on delivering your Pearson BTEC Level 2 Technicals. They include the following.

- Standards Verifiers – they can support you with preparing your assignments, ensuring that your assessment plan is set up correctly, in preparing learner work and providing quality assurance through sampling.
- Subject Advisors – available for all sectors. They understand all Pearson qualifications in their sector and so can answer sector-specific queries on planning, teaching, learning and assessment.
- Curriculum Development Managers (CDMs) – they are regionally based and have a full overview of BTEC qualifications and of the support and resources that Pearson provides. CDMs often run network events.
- Customer Services – the 'Support for You' section of our website gives the different ways in which you can contact us for general queries. For specific queries, our service operators can direct you to the relevant person or department.

Training and professional development

We provide a range of training and professional development events to support the introduction, delivery, assessment and administration of the Pearson BTEC Level 2 Technicals.

These sector-specific events, developed and delivered by specialists, are available both face to face and online.

BTEC Level 2 Technical Certificate in
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