Higher Nationals

Animal Conservation and Countryside Management for England

Specification

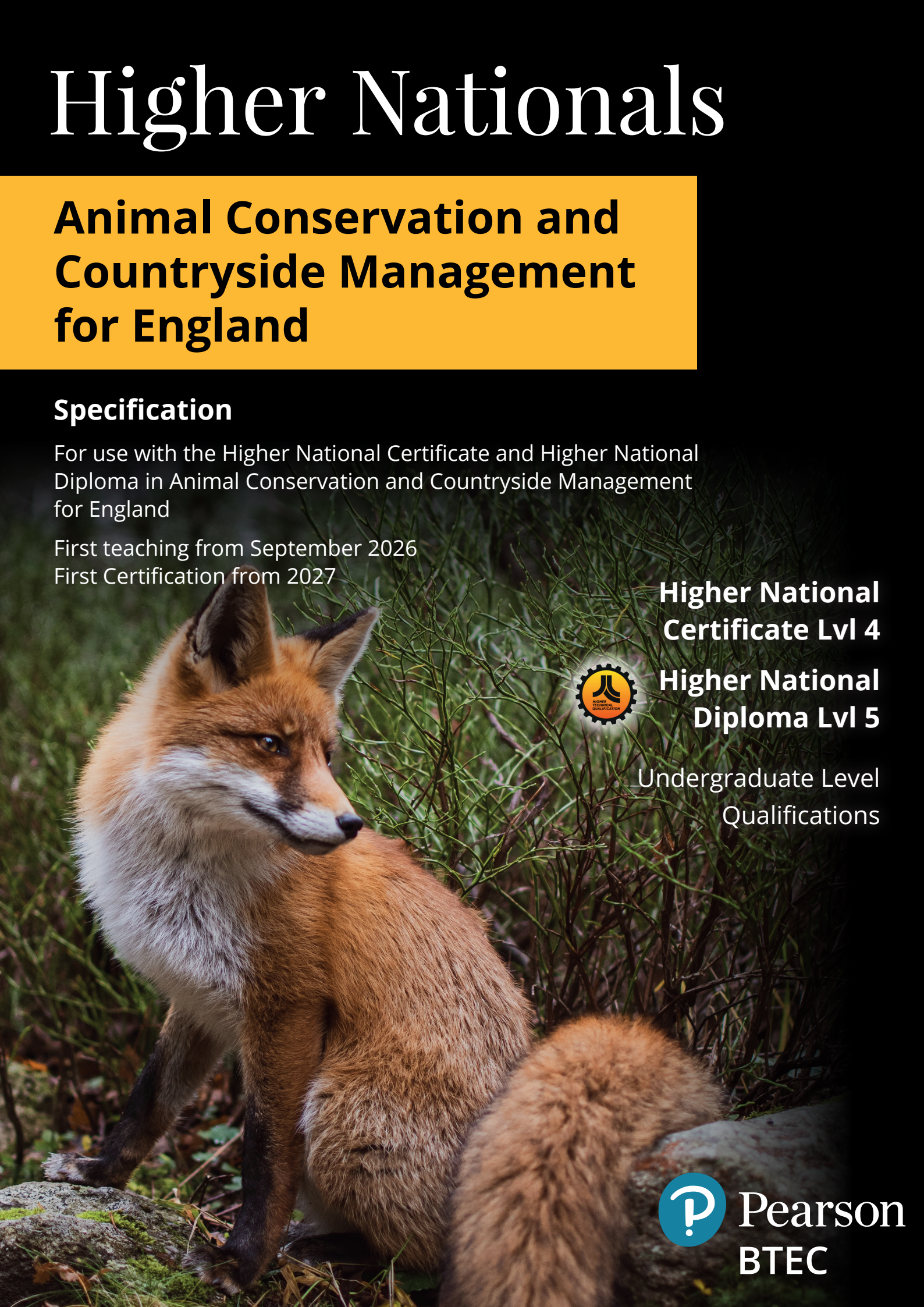
For use with the Higher National Certificate and Higher National Diploma in Animal Conservation and Countryside Management for England

First teaching from September 2026
First Certification from 2027

Higher National Certificate Lvl 4

Higher National Diploma Lvl 5

Undergraduate Level Qualifications



Pearson BTEC

About Pearson

We are the world's leading learning company operating in countries all around the world. We provide content, assessment and digital services to learners, educational institutions, employers, governments and other partners globally. We are committed to helping equip learners with the skills they need to enhance their employability prospects and to succeed in the changing world of work. We believe that wherever learning flourishes so do people.

Publication code HN000017

Summary of changes in BTEC Animal Conservation and Countryside Management for England specification Issue 2

Summary of changes made between previous issue and this current issue	Page number
Unit 8: Biological Principles (LO4 Essential Content) Essential content for LO4 has been revised to clarify expectations for practical investigations. The updated wording provides clearer guidance on planning, implementation, data handling, analysis, and evaluation, and includes illustrative examples.	126-127

If you need further information on these changes or what they mean, contact us via our website at: qualifications.pearson.com/en/support/contact-us.html.

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1.0 Introduction

BTEC is one of the world's most recognised applied learning brands, engaging students in practical, interpersonal and thinking skills for more than three decades.

BTECs are work-related qualifications for students taking their first steps into employment, or for those already in employment and seeking career development opportunities. BTECs provide progression into the workplace, either directly or via study at university, and are also designed to meet employers' needs. Therefore, Pearson BTEC Higher National qualifications are widely recognised by industry and higher education as the principal career-related qualification at Levels 4 and 5.

When developing our BTEC Higher National qualifications, we work with a wide range of students, employers, higher education providers, colleges and subject experts to make sure the qualifications meet their needs and expectations. We also work closely with professional organisations to make sure the qualifications are in line with recognised professional standards.

The Pearson BTEC Higher National qualifications are designed to reflect the increasing need for high-quality professional and technical education at undergraduate Levels 4 and 5. They provide students with a clear line of sight to employment and to a degree at Level 6 if they choose.

1.1 Qualifications indicated 'for England'

Qualifications that are indicated as 'for England' are designed to align to the requirements of specific occupational standards that meet the Institute for Apprenticeships and Technical Education (IfATE) current occupation criteria. Meeting the requirements of the occupational standards relates to:

- qualifications that are 'quality marked' as Higher Technical Qualifications (HTQs)
- the knowledge, skills and behaviours for identified occupations associated with the relevant occupational standards.

1.2 Qualifications not indicated 'for England'

Qualifications that are **not** indicated as 'for England' can be delivered at any centre, in the UK or overseas, subject to approvals from Pearson. These qualifications are not 'quality marked' as HTQs by IfATE.

1.3 The student voice

Students are at the heart of what we do. That is why we consult them from the start when developing our Higher National qualifications. We involve them in writing groups, seek their feedback and take note of their opinions.

This helps us develop the best possible qualifications and learning experience for students worldwide.

1.4 Why choose Pearson BTEC Higher Nationals?

Pearson BTEC Higher National qualifications take a student-centred approach to the curriculum. There is a flexible, unit-based structure that focuses on developing the practical, interpersonal and thinking skills that students will need to succeed in employment and higher education. They represent the latest in professional standards and provide opportunities for students to develop skills and behaviours for work, for example by taking part in a group project or meeting a client brief. A student may be exempted from professional or vendor qualifications and membership of selected professional organisations, to help them on their journey to professional recognition or membership.

Pearson BTEC Higher Nationals are intended to keep doors open for future study if a student wishes to take their education further after completing a Higher National programme. They do this by allowing space for students to develop their higher education study skills, such as the ability to research. The study programme is clearly set out in line with the Quality Assurance Agency for Higher Education's Framework for Higher Education qualification standards at Levels 4 and 5. This means that students who want to progress to Levels 5 or 6 study should feel well prepared.

The Pearson BTEC Higher Nationals meet these requirements by providing:

- a range of general and specialist study units, each with a clear purpose, so there is something to suit each student's choice of programme and future progression plans
- up-to-date content, closely in line with the needs of employers, professional bodies and higher education, for a skilled future workforce
- Learning Outcomes mapped against professional body standards, where appropriate
- support for tutors, including Authorised Assignment Briefs, curriculum planning support and assessment guidance, and
- support for students, including digital learning resources and communities, through HN Global.

1.5 HN Global

Our HN Global website provides a specially designed range of digital resources to give tutors and students the best possible experience during their BTEC Higher Nationals course. More information is available at: https://hnglobal.highernationals.com/.

1.6 Qualification titles

1.6.1 Pearson BTEC Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England

Qualification title:

- Pearson BTEC Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England.

1.6.2 Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England

Qualification title:

- Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England.

1.7 Qualification codes

Ofqual Regulated Qualifications Framework (RQF) qualification numbers:

- Pearson BTEC Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England: **610/6440/3**
- Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England: **610/6441/5**

1.8 Awarding organisation

Pearson Education Ltd.

1.9 Key features

Pearson BTEC Higher National qualifications in Animal Conservation and Countryside Management for England offer the following:

- an exciting and informative study programme that stimulates and challenges students
- a simple and flexible structure that enables students to take the Higher National Certificate and then build on it in the Higher National Diploma, with units linked to their specialist area of study

- an opportunity for students to follow specialist routes of interest at Level 5, gaining the knowledge and skills they need to progress to higher education or employment in their specialist area
- core competencies developed throughout the curriculum, to support lifelong learning skills for personal and professional development
- the opportunity for centres to offer assessments that consider cognitive skills (what students know) along with effective and applied skills (how they behave and what they can do) to support a practical and dynamic approach to learning
- unit-specific assessment and Pearson-set themes designed to encourage thorough and analytical learning, challenge students and develop skills in critical thinking, personal responsibility and decision-making
- a flexible approach to assessment that supports progression to higher education or work and allows for different learning styles
- quality assurance measures that assure professional organisations, universities, businesses, colleges and students of the integrity and value of the qualifications, and
- a programme of learning designed to meet skills gaps in the current workforce and build today's talent to meet tomorrow's needs in an international environment.

1.10 Qualification frameworks

Pearson BTEC Higher National qualifications are recognised higher education qualifications in the UK. They are in line with the Framework for Higher Education Qualifications (FHEQ) in England, Wales and Northern Ireland, and Quality Assurance Agency (QAA) Subject Benchmark Statements, where applicable. These qualifications are part of the Regulated Qualifications Framework (RQF).

1.11 Collaborative development

We are very grateful to the university and further education tutors, employers, professional body representatives and other individuals who have generously shared their time and expertise to help us develop these new qualifications:

- ADAS
- Chartered Institute of Ecology and Environmental Management
- Manchester Metropolitan University
- Royal Agricultural University
- University Centre Peterborough
- WeCare Wildlife Rescue
- Whipsnade Zoo
- Wiltshire College and University Centre
- Zoological Society of London.

2.0 Programme purpose and objectives

2.1 Purpose

The purpose of these qualifications is to develop students as independent-thinking professionals who can meet the demands of employers and adapt to a constantly changing world. The qualifications aim to widen access to higher education and improve the career prospects of those who take them.

2.2 Objectives

The objectives of these qualifications are:

- to develop the skills, knowledge and understanding that students need to achieve high performance in the animal conservation and countryside management environment
- to develop students with enquiring minds, who have the abilities and confidence to work across different animal conservation and countryside management functions and to lead, manage, respond to change and tackle a range of complex animal conservation and countryside management situations
- to provide the core skills required for a range of careers in animal conservation and countryside management, including animal health and welfare, managing environmental resources, wildlife conservation, habitat restoration and repair
- to offer a balance between employability skills and the knowledge essential for students with entrepreneurial, employment or academic ambitions.

2.2.1 Health and safety in the Pearson BTEC Higher Nationals in Animal Conservation and Countryside Management for England

Health and safety in animal conservation and countryside management is both a regulatory responsibility and a matter of ethical practice. It is important that everyone working in the sector, including those in education and training, is aware of the legislation, regulation and practice of ensuring the safety of those working in animal conservation and countryside management and those who will use the facilities and infrastructure that are the outcomes of animal conservation and countryside management.

Pearson has taken the approach that health and safety be integrated throughout the qualifications, where appropriate. This is to ensure that students do not see health and safety matters as being separate or 'standalone' activities. Rather, health and safety should be understood as a standard feature of typical animal conservation and countryside management practices. Units within these qualifications include curriculums related to health and safety and statutory requirements. Where such topics are included in Essential Content, it is a requirement that they are taught in

sufficient depth to ensure that students understand the importance of the topic. Where there are assessment criteria that call specifically for students to evidence aspects of health and safety, risk assessment, legislation or regulation, it is required that these are designed in the assessment.

2.3 Aims of the Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England

The Level 4 units lay the foundations of learning by providing a broad introduction to animal conservation and countryside management. This develops and strengthens core skills while preparing students for specialist subjects at Level 5 or to enter employment with the qualities necessary for job roles that require some personal responsibility.

Students will gain a wide range of animal conservation and countryside management knowledge linked to practical skills gained through research, independent study, directed study and workplace scenarios. Students are involved in vocational activities that help them to develop vocational behaviours (the attitudes and approaches required for competence) and transferable skills. Transferable skills are those such as communication, teamwork, research and analysis, which are highly valued in higher education and in the workplace.

By the end of Level 4, students will have sound knowledge of the basic concepts of animal conservation and countryside management. They will be competent in a range of subject-specific skills as well as in general skills and qualities relevant to key areas of animal conservation and countryside management.

2.4 Aims of the Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England

The Level 5 units give students the opportunity to specialise in an animal conservation and countryside management-related occupational area and to progress to degree-level study. The units prepare students to move on to specific areas of animal conservation and countryside management at Level 6 or to enter employment with the qualities and abilities necessary for roles that require personal responsibility and decision-making.

Students will be able to develop and apply their own ideas to their studies, to deal with uncertainty and complexity, to explore solutions, demonstrate critical evaluation and use both theory and practice in a wide range of animal conservation and countryside management situations.

By the end of Level 5, students will have a sound understanding of the principles in their area of specialist study and will know how to apply those principles more widely in the business world. They will be able to perform effectively in their specialist area.

2.5 Developing students' employability skills and academic study skills

Employability skills (sometimes referred to as transferable skills) are vital to increase students' career prospects and contribute to their personal development. Our BTEC Higher Nationals in Animal Conservation and Countryside Management for England support students in developing the key skills, qualities and strengths that employers are looking for.

We divide employability skills into five main categories.

Problem-solving skills

These include:

- critical thinking
- using expert and creative solutions to solve non-routine problems
- using systems and digital technology, and
- generating and communicating ideas creatively.

Independent skills

These include:

- self-management
- adaptability and resilience
- self-monitoring and self-development
- self-analysis, and
- reflection, planning and prioritising.

Interpersonal skills

These include:

- leadership skills
- communicating effectively
- working with others
- negotiating and influencing, and
- presentation skills.

Commercial skills

These include:

- awareness of the business sector
- sales
- marketing and promotion, and
- managing and monitoring budgets.

Business skills

These include:

- awareness of types of companies and legal structures
- invoicing
- presenting financial information, and
- business management.

Students also benefit from opportunities for deeper learning, where they can make connections between different study units and select areas of interest for detailed study. In this way, the BTEC Higher National in Animal Conservation and Countryside Management for England provides a vocational context in which students can develop the knowledge and academic study skills they need to progress to university degree courses.

These academic study skills include:

- active research
- effective writing
- analytical skills
- critical thinking
- creative problem solving
- decision-making
- preparing for exams, and
- using digital technology.

Students can also develop their academic skills through independent study modules and resources on the HN Global website: https://hnglobal.highernationals.com/.

2.5.1 Use of maths and English within the curriculum

A career in animal conservation and countryside management requires both technical skills and broader employability skills. For example, appropriate communication with clients and colleagues is an essential skill, so the ability to use maths and English in a professional context is a key area for student development.

This type of development is embedded throughout BTEC Higher Nationals, in line with industry requirements. During their course, students may, for example, be involved in:

- preparing written reports
- giving formal presentations
- taking part in informal conversations
- using professional, sector-specific language.

Some aspects of animal conservation and countryside management require maths skills and we strongly recommend that all students complete diagnostic maths assessments before beginning a Higher National course, as well as having a grade 9 to 4 or A* to C in GCSE Maths. (See *Section 5.2* for more information.)

2.6 What could these qualifications lead to?

The Level 4 Higher National Certificate provides a solid grounding in animal conservation and countryside management, which students can build on if they decide to continue their studies. The Level 5 Higher National Diploma allows students to specialise by committing to specific career paths and progression routes to degree-level study.

Once students have achieved the Level 5 Higher National Diploma, they can develop their careers in the business sector by:

- entering employment
- continuing existing employment
- linking with the appropriate professional body
- linking with the appropriate vendor-accredited certificates (if appropriate)
- committing to continuing professional development (CPD)
- progressing to university.

2.6.1 Progression to university

The Level 5 Higher National Diploma is recognised by higher education providers as meeting admission requirements to many relevant undergraduate animal conservation and countryside management-related courses, for example:

- BA/Sc (Hons) Wildlife and Countryside Management
- BA/Sc (Hons) Environmental Conservation
- BA/Sc (Hons) Wildlife Conservation
- BA/Sc (Hons) Countryside and Land Management
- BA/Sc (Hons) Wildlife and Environmental Conservation.

2.6.2 University recognition and articulations

We work with a range of higher education institutions around the world that accept Pearson BTEC Higher Nationals as a qualification for entry to their undergraduate degree courses. Many universities allow advanced entry to the second or third year of the course. Agreements can include transferring learning credits from one course or qualification to the other, articulation and case-by-case admission. An articulation agreement involves universities mapping the learning content of a Higher National against their degree programme(s). This process helps them understand how strong the alignment is between the Higher National and degree and supports them in providing more guidance for learners during the admissions process.

Students should be aware that each university sets its own admission criteria and that those criteria can change. Before applying, students should understand the course entry requirements for the subject and year in which they want to study. For more information on entry requirements, including 2+1 articulations, please visit: https://hnglobal.highernationals.com/degree-finder.

3.0 Preparing students for employment

3.1 Designing with employers, for employers

As a large employer and qualification-awarding organisation, Pearson understands the value of developing the skills and talent of the future workforce. We believe in, and champion, higher technical education that is relevant to employers.

We work with employers, students, professional bodies, education providers and other experts to design qualifications with the future workforce in mind. Higher National qualifications blend employability skills with academic, business and technical knowledge. They support trainees and apprentices in their Higher Apprenticeship and other technical education programmes, as well as students working towards a degree. We update our programmes regularly to maintain their high quality and meet the changing needs of the workforce.

Employers contribute to our Higher Nationals in several ways:

- They are involved in every stage of designing our qualifications, from developing the structure and pathways to selecting subjects, developing content and approving qualifications.
- They help us deliver qualifications, for example, through vendor accreditation, letters of support and co-badging. Our qualifications actively encourage training providers to work with employers. Work placements and work-related learning are key features of BTEC Higher Nationals.
- They help us review and update our qualifications to meet occupational standards and provide supporting material such as case studies to reflect the real world of work.

We are committed to equipping apprentices, trainees and organisations with the tools and resources they need to support high-quality, innovative technical education and Higher Apprenticeship programmes that work.

Including a Higher National qualification as part of a Higher Apprenticeship or technical education programme gives students:

- an internationally recognised higher-level qualification in line with the Framework for Higher Education Qualifications, and
- a stepping-stone to continue their education or training and gain a recognised degree or professional qualification.

To find out more, and to access detailed mapping to higher apprenticeships and occupational standards for your qualification, please visit the following pages: https://qualifications.pearson.com/en/qualifications/apprenticeships.html and https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/higher-nationals/higher-technical-qualifications.html on our website.

3.1.1 Employability skills and competencies for student career success

Pearson is committed to delivering learning that is rooted in the real world and to developing work-ready graduates with the professional skills and behaviours that employers need. The Pearson BTEC Higher National curriculum provides a clear line of sight to employment, depending on which specialist areas students complete. The aim is to produce students who are equipped to thrive in the changing world of work, whether they leave with an HNC or an HND qualification.

The table below shows the type of position in which a student graduating at each educational level might expect to start and gives some examples of the competencies expected.

Levels of competency			
Employability level at learning level	**Level 4 Operational**	**Level 5 Managerial**	**Level 6 Professional**
General employment outcomes for graduates at each level	Graduates can: • perform key animal conservation and countryside management tasks • understand processes and operations, and • work effectively.	Graduates can: • increase performance through strategic planning to meet animal conservation and countryside management aims, and • manage animal conservation and countryside management functions to work effectively in lower- or middle-management positions.	Graduates can: • take the lead and direct others, and • manage change effectively in middle-management positions.
Examples of roles in different areas of animal conservation and countryside management	Assistant animal conservation and countryside management supervisor Assistant countryside ranger	Animal conservation and countryside management supervisor Countryside ranger	Senior animal conservation and countryside management supervisor Senior countryside ranger

Table 1: Levels of competency at employability level and examples of roles in different areas of animal conservation and countryside management at each level

3.1.2 Developing competencies for the workplace

Core competencies developed on the programme will support students in preparing for a range of employment opportunities in their chosen sector. These core competencies collectively summarise the key capabilities that are important across the sector, covering areas of relevant expertise and technical skills that would be required within the sector to successfully perform a job, as defined in current advertised job vacancies.

Core competencies are developed on the programme within a balanced framework of cognitive (knowledge), affective (behaviours) and psychomotor (practical) Learning Outcomes to encourage a more vocational and practical approach to learning.

4.0 Centre support

You can access a wide range of resources and support to help you set up and deliver our Pearson BTEC Higher Nationals in Animal Conservation and Countryside Management for England with confidence.

4.1 Specification

This specification gives you details of the administration of the qualifications and information on the units included in them.

4.2 HN Global

HN Global is a dedicated online learning platform for all Pearson BTEC Higher National students and delivery centres. You can find various free resources to support staff in delivering a Pearson BTEC Higher National programme and to guide students on their learning journey. The HN Global Forum connects students and tutors, and provides the opportunity to discuss common themes and to share good practice. HN Global also provides access to the following:

The Learning Zone includes student study materials such as core textbooks, study skills modules, a 'Progression hub' featuring opportunities to develop employability skills, an e-library and subject materials.

The Tutor Resources section hosts a wealth of delivery materials, reading lists, blended learning resources, video guidance on assessment and professional development opportunities. Staff can also access the Quality Assurance (QA) Hub for templates and more centre support.

Short Courses provide support for curriculum planning, developing schemes of work and developing students' academic skills.

These are available from the HN Global website at: https://hnglobal.highernationals.com/.

4.3 Authorised Assignment Briefs

We provide a booklet of Authorised Assignment Briefs (AABs) for a sample of units. These AABs have been developed to support centres with their assessment strategy for the delivery of a sample of units, as well as providing guidance and inspiration for effective planning and design of future Assignment Briefs.

It is important to note:

1. AABs can be used by centres if they meet your specific requirements following internal verification. They have been written to assess students' knowledge, understanding and skills specifically relevant to the unit Learning Outcomes but they have not been contextualised to meet local need and international diversity. If using an AAB, the Assignment Brief should still be internally marked and made available for standards verification.
2. AABs can be modified and customised to meet localisation.

The AABs offer a range of real and simulated assessment activities; for example, group work to encourage cooperation and social skills or a solution-focused case study to develop cognitive skills. The assessment grids for each unit explain the specific requirements for assessing these skills.

All assignments must still be moderated in line with the internal verification process. These AABs along with further guidance can be found in the *Effective assignment design for the Higher Nationals in Animal Conservation and Countryside Management for England: Authorised Assignment Briefs* booklet available on HN Global at: https://hnglobal.highernationals.com/.

The tutor resources section on HN Global also offers a wide range of resources and guidance documents to help you plan and design assessments effectively.

4.4 Pearson English

Pearson provides a full range of support for English learning, including diagnostics, qualifications and learning resources. Please see: https://www.pearson.com/languages.

The Pearson Languages portal also offers a variety of digital resources. The portal encourages users to get involved, and improves teaching and results.

5.0 Planning your programme

5.1 Delivering Higher Nationals

As a large employer and qualification-awarding organisation, Pearson understands the value of developing the skills and talent of the future workforce. We believe in, and champion, higher technical education that is relevant to employers.

You play a central role in helping your students choose the right Pearson BTEC Higher National qualification.

Assess your students very carefully to make sure they take the right qualification. This will allow them to progress to the next stage in their learning or employment journey. You should also check the qualification structures and unit combinations carefully when giving students advice.

Make sure your students have access to a full range of information and advice to help them choose the right qualification and units. When students are recruited, you need to give them accurate information on the title and focus of the qualification they are studying for. Centres must provide a programme specification for approvals but it is also essential that centres produce:

- a staff handbook to support full-time and part-time members of your team, and
- a student handbook to guide students through the course requirements so they know what is expected of them and understand their rights.

You can find more information in the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment* handbook, available to download on our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

5.1.1 Centre approval

We need to approve all centres before they can offer our qualifications. This is to make sure that centres are ready to assess students and that we can provide the support you need.

For more information about becoming a centre and gaining approval to run our qualifications, please see 'Centre/Qualification approvals' in the support section of our website at: https://support.pearson.com/uk/s/article/Centre-Qualification-Approvals.

5.1.2 Tutor knowledge

Pearson does not currently explicitly stipulate any qualification or experience requirements for staff involved in the delivery, assessment and internal verification of BTEC higher education qualifications. This is because it would not be practical to impose such stipulations to cover the very wide range of subject areas and field of experience that the BTEC higher education qualifications encompass.

However, it is expected that centres recruit all delivery, assessment and internal verification staff with integrity, and have robust staff recruitment processes in place. It is expected that staff hold a nationally recognised qualification at or above the level of the qualification being delivered and/or equivalent relevant experience.

You can find more information in the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment* handbook, available to download on our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

5.1.3 Resources

As part of your centre approval, you will need to show that the right resources and workspaces are available to deliver Pearson BTEC Higher Nationals. Some units need specific resources. This is clearly explained in the unit descriptions, where appropriate.

5.1.4 Delivering learning

With our approval, you can deliver our Pearson BTEC Higher Nationals using a mixture of learning options that meet your students' needs. We recommend you offer full-time, part-time, blended learning and distance learning modes of delivery.

If you are delivering distance learning, please see the *Pearson distance learning and assessment policy* available to download at: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

5.1.5 Support from Pearson

For each programme with active registrations, we will provide an external examiner to help you plan and review assessments. You will also be able to access training events and support from a dedicated team of Pearson Higher National subject leads. Please see: https://qualifications.pearson.com/en/support/training-from-pearson-uk.html.

5.2 Entry requirements and admissions

Pearson does not set formal entry requirements for our qualifications but, as a centre, you are responsible for making sure that the students you recruit have a reasonable chance of success on the programme.

Students who have recently been in education are likely to need:

- a BTEC Level 3 qualification in Animal Management
- a BTEC Level 3 qualification in Countryside Management
- a GCE Advanced Level profile that demonstrates strong performance in a relevant subject or adequate performance in more than one GCE subject. This profile is likely to be supported by GCSE grades at 9 to 4 and/or A* to C (or equivalent) in subjects such as maths and English
- other related Level 3 qualifications
- an Access to Higher Education Diploma from an approved further education institution
- relevant work experience, or
- an international equivalent to the above qualifications.

Our recognition of prior learning policy means that students' previous learning and experience can be taken into account and they may be awarded certain qualifications or units of a qualification based on that learning or experience. Please see *Section 9* for more information.

5.2.1 English language requirements

Pearson's mission is to help people make more of their lives through learning.

To assist centres to recruit students who have the skills to benefit from undertaking a Higher National programme of study, we are providing the following clarification regarding the English language **admission requirements** when offering places to applicants.

All centres delivering Pearson BTEC Higher National qualifications in English must ensure that each applicant can demonstrate their capability to learn and be assessed at the relevant level in English.

Students applying for a Pearson BTEC Higher National qualification that is **taught and assessed completely in English** will need a certain level of English language skills.

Before accepting students onto a programme, you must make sure that those who are non-native English speakers and who have not carried out their final two years of schooling in English can demonstrate ability at a standard equivalent to:

- Common European Framework of Reference (CEFR) level **B2**
- Pearson Test of English (PTE) Academic **51**
- International English Language Testing System (IELTS) **5.5** (reading and writing must be at **5.5**).

Students who have completed a Pearson BTEC Higher National qualification delivered partly or completely in another language but assessed in English will need to demonstrate ability in English to the standard above but at the **end** of the programme.

It is up to you to decide what proof of ability students will need to provide.

5.3 Access to study

This section focuses on the administration you will need to carry out when delivering our Pearson BTEC Higher National qualifications. It will be most relevant to quality controllers, programme leaders and examinations officers.

Our qualifications should:

- be available to everyone able to reach the required standards
- be free from any barriers that restrict access and progress, and
- provide equal opportunities for all those who want to access the qualifications.

For more information, please see our *Equity, diversity and inclusion in Pearson qualifications and related services policy*, available at: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

Please recruit with integrity when registering students to our Pearson BTEC Higher National programmes. You should:

- make sure that students applying have the information and advice they need about the qualification to be sure it meets their needs
- check each student's qualifications and experience to make sure they have the potential to achieve the qualification, and
- for students with disabilities and specific needs, consider the support available to them during teaching and assessment. For more guidance, please see *Section 5.6.2* on reasonable adjustments.

5.4 Student registration and entry

All students should be registered on the qualification they are studying and suitable arrangements need to be made for internal and external verification. For information on making registrations, please see the information manual available in the support section of our website at: https://qualifications.pearson.com/en/support/support-for-you/exam-officers-administrators/entries-information-manual.html?view=manual.

Students can be formally assessed only for a qualification on which they are registered. If a student changes the qualification they want to study for, you must transfer their registration to the new qualification. We cannot sample a student's work unless they are registered on the correct qualification.

5.5 Access to assessments

Assessments need to be managed carefully so that all students are treated fairly and that results and certificates are published without delay.

Our equity, diversity and inclusion policy requires that:

- all students have an equal opportunity to access our qualifications and assessments, and
- our qualifications are awarded in a way that is fair to every student.

We are committed to making sure that:

- students with a protected characteristic as defined by law (for example, race, sexual orientation, religion or belief) are not disadvantaged in comparison to students who do not share that characteristic
- all students achieve the recognition they deserve for taking a qualification, and this achievement can be compared fairly with the achievement of their peers.

For more information on access arrangements, please visit the Joint Council for Qualifications (JCQ) website at: https://www.jcq.org.uk/exams-office/access-arrangements-and-special-consideration/.

5.6 Administrative arrangements for internal assessment

5.6.1 Records

You are required to retain records of assessment for each student. Records should include assessments taken, decisions reached and any adjustments or appeals. Further information on quality and assessment can be found in our UK and international guides available in the support section on our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html. We may ask to audit your records, so they must be retained as specified. All student work must be retained for **a minimum of 12 weeks** after certification has taken place.

5.6.2 Reasonable adjustments to assessment

A reasonable adjustment is one that is made before a student takes an assessment, to ensure that they have fair access to demonstrate the requirements of the assessments.

You are able to make adjustments to internal assessments to take account of the needs of individual students. 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 students with protected characteristics are available in the support section of our website: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

5.6.3 Special consideration

Special consideration is given after an assessment has taken place for students who have been affected by adverse circumstances, such as illness, and require an adjustment of grade to reflect normal level of attainment. You must operate special consideration in line with Pearson policy. 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 in line with the JCQ guide to the special consideration process, which can be downloaded from the JCQ website: https://www.jcq.org.uk/exams-office/access-arrangements-and-special-consideration/regulations-and-guidance/.

Please note that your centre must have a policy for dealing with mitigating circumstances if students are affected by adverse circumstances, such as illness, which result in non-submission or late submission of assessment.

5.6.4 Appeals against assessment

Your centre must have a policy for dealing with appeals from students. These appeals may relate to assessment decisions being incorrect or assessment not being conducted fairly. The first step in such a policy could be a consideration of the evidence by a Programme Leader or other member of the programme team. The assessment plan should allow time for potential appeals after assessment decisions have been given to students. If there is an appeal by a student, you must document the appeal and its resolution. Students have a final right of appeal to Pearson, but only if the procedures that you have put in place have been followed.

Further details of our policy on enquiries and appeals are available in the support section of our website: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html/ and can be downloaded from the JCQ website: https://www.jcq.org.uk/exams-office/access-arrangements-and-special-consideration/.

If your centre is located in England or Wales and the student is still dissatisfied with the final outcome of their appeal, they can make a further appeal to the Office of the Independent Adjudicator (OIA) by emailing: enquiries@oiahe.org.uk. In Northern Ireland, a further appeal may be lodged with the Northern Ireland Public Service Ombudsman (NIPSO) by emailing: nipso@nipso.org.uk.

5.7 Dealing with malpractice in assessment

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

Pearson does not tolerate actual 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 malpractice or attempted malpractice has been proven.

Malpractice may occur or be suspected in relation to any unit or type of assessment within a qualification. For further details on malpractice and advice on preventing malpractice by learners, please see Pearson's *Centre guidance: dealing with malpractice and maladministration*, available to download on our website: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

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. The *Centre guidance: dealing with malpractice and maladministration* document gives full information on the actions we expect you to take.

Pearson may conduct investigations if we believe a centre is failing to conduct internal assessment according to our policies. The malpractice guidance document gives further information and 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.

5.7.1 Student malpractice

The Heads of Centres are required to report incidents of suspected student malpractice that occur during Pearson qualifications. We ask centres to complete a *JCQ Form M1* available to download at: www.jcq.org.uk/malpractice and email it with any accompanying documents (signed statements from the student and invigilator, copies of evidence etc.) to the Investigations Processing team at: candidatemalpractice@pearson.com. The responsibility for determining appropriate sanctions or penalties to be imposed on students lies with Pearson.

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

Failure to report malpractice constitutes staff or centre malpractice.

5.7.2 Tutor and centre malpractice

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

Pearson reserves the right in cases of suspected malpractice to withhold the issuing of results/certificates while an investigation is in progress. Depending on the outcome of the investigation, results and/or certificates may not be released or they may be withheld.

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

5.7.3 Sanctions and appeals

Where malpractice is proven, we may impose sanctions or penalties, such as:

- mark reduction for affected external assessments
- disqualification from the qualification, or
- debarment 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 centres to create an improvement action plan
- requiring staff members to receive further training
- placing temporary suspensions on certification of learners
- placing temporary suspensions on registration of learners
- debarring staff members or the centre from delivering Pearson qualifications, or
- suspending or withdrawing centre approval status.

The centre will be notified if any of these apply.

Pearson has established procedures for considering appeals against penalties and sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from the Head of Centre (on behalf of learners and/or members of staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in the JCQ Appeals booklet available to download at: https://www.jcq.org.uk/exams-office/appeals.

6.0 Programme structure

6.1 Units, credits, total qualification time (TQT)

The Higher National Certificate (HNC) is a Level 4 qualification made up of 120 credits. It is usually studied full time over one year, or part time over two years.

The Higher National Diploma (HND) is a Level 4 and Level 5 qualification made up of 240 credits. It is usually studied full time over two years, or part time over four years.

Pearson would expect an HND student to have achieved at least 90 credits at Level 4 before progressing to Level 5 units. This allows the student to submit the remaining 30 credits at Level 4 while continuing with their Level 5 study.

If an HND student does not complete the full qualification, they may be awarded an HNC if they have gained enough credits.

Pearson BTEC Higher Nationals consist of core units, specialist units and optional units (if any).

- Core and specialist units are mandatory.
- Specialist units provide a specific occupational focus to the qualification, in line with professional body standards.
- Optional units (if any) provide greater depth and breadth of study and can be localised.

Each unit usually carries 15 credits. Units are designed around the amount of time it will take for a student to complete them and receive a qualification. This is known as the total qualification time (TQT). TQT includes guided learning activities, directed learning activities and assessment. Each 15-credit unit has a TQT of 150 hours – 60 guided learning hours (GLH) and 90 independent learning hours (ILH). (For more information about guided and independent learning see *Sections 6.1.1* and *6.1.2*.)

- **The total qualification time for Higher National Certificate (HNC) = 1,200 hours.**
- **The total qualification time for Higher National Diploma (HND) = 2,400 hours.**

Examples of activities that can contribute to TQT include:

- guided learning
- independent and unsupervised research and learning
- unsupervised creation of a portfolio of work experience
- unsupervised e-learning
- unsupervised e-assessments
- unsupervised coursework
- watching a recorded podcast or webinar, and
- unsupervised work-based learning.

6.1.1 Guided learning hours

These are the hours where a tutor is present to give specific guidance towards the learning aim being studied. Guided learning hours include lectures, tutorials and supervised study in, for example, open learning centres and learning workshops. They also include supervised assessment activities such as invigilated exams, observed assessments and observed work-based practice.

- **The total guided learning hours for Higher National Certificate (HNC) = 480 hours.**
- **The total guided learning hours for Higher National Diploma (HND) = 960 hours.**

Examples of activities that can contribute to guided learning include:

- classroom-based learning supervised by a tutor
- work-based learning supervised by a tutor
- a live webinar or telephone tutorial with a tutor
- live e-learning supervised by a tutor, and
- all forms of assessment guided or supervised at the time by a tutor or other education or training provider. This includes where the assessment is competence-based and turned into a learning opportunity.

6.1.2 Independent learning hours

These are the hours where a student is learning without the direct guidance of a member of centre staff. They are critical to the student's ability to develop knowledge and skills, as well as providing them with the opportunity to develop key transferable skills such as self-discipline, time management and self-motivation.

- **The total independent learning hours for Higher National Certificate (HNC) = 720 hours.**
- **The total independent learning hours for Higher National Diploma (HND) = 1,440 hours.**

Some examples of activities that can contribute to independent learning include:

- self-directed research and investigation
- reading set texts or other sources of information
- watching subject-related videos as part of investigation and research
- reviewing recordings of scheduled sessions or notes from those sessions
- peer activities, such as group meetings and online discussions, where students explore their learning together, and
- reviewing and recording thoughts on their own learning.

6.2 Programme structures

Programme structures specify the:

- total credit value of the qualification
- minimum credit to be achieved at the level of the qualification
- core units required
- specialist units required
- optional units available (if any), and
- maximum credit value in units that can be achieved.

When combining units for our Pearson BTEC Higher National qualification, it is up to the centre to make sure that the correct combinations are followed.

6.2.1 Pearson BTEC Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England

- Requires at least 120 credits, all at Level 4
- Total qualification time = 1,200 hours
- Total guided learning hours = 480 hours
- Mix of core and specialist mandatory units, totalling 120 credits.

6.2.1.1 Pearson BTEC Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England

Pearson BTEC Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England			
Unit type	**Unit**	**Credits**	**Level**
Core *Mandatory*	Unit 1: Animal Health and Welfare	15	4
Core *Mandatory*	Unit 2: Business and the Business Environment	15	4
Core *Mandatory*	Unit 3: Managing a Successful Project (Pearson-set)	15	4
Core *Mandatory*	Unit 4: Managing Environmental Resources	15	4
Core *Mandatory*	Unit 5: Principles of Ecology and their Applications	15	4
Core *Mandatory*	Unit 6: British Wildlife	15	4
Core *Mandatory*	Unit 7: Practical Conservation and Land Management	30	4

Table 2: Qualification structure for Pearson BTEC Higher National Certificate in Animal Conservation and Countryside Management for England – Level 4

6.2.2 Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England

- Requires 240 credits, of which 120 credits are at Level 5 and 120 credits are at Level 4.
- Total qualification time = 2,400 hours.
- Total guided learning hours = 960 hours.
- Mix of core and specialist mandatory units, totalling 240 credits.

6.2.2.1 Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England

Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England			
Unit type	**Unit**	**Credits**	**Level**
Core *Mandatory*	Unit 1: Animal Health and Welfare	15	4
Core *Mandatory*	Unit 2: Business and the Business Environment	15	4
Core *Mandatory*	Unit 3: Managing a Successful Project (Pearson-set)	15	4
Specialist *Mandatory*	Unit 4: Managing Environmental Resources	15	4
Specialist *Mandatory*	Unit 5: Principles of Ecology and their Applications	15	4
Specialist *Mandatory*	Unit 6: British Wildlife	15	4
Specialist *Mandatory*	Unit 7: Practical Conservation and Land Management	30	4
Core *Mandatory*	Unit 8: Biological Principles	15	5
Core *Mandatory*	Unit 9: Research Project (Pearson-set)	30	5
Specialist *Mandatory*	Unit 10: Wildlife Conservation	15	5
Specialist *Mandatory*	Unit 11: Work Experience in the Conservation and Countryside Sector	30	5
Specialist *Mandatory*	Unit 12: Habitat Restoration, Repair and Education	30	5

Table 3: Qualification structure for Pearson BTEC Higher National Diploma in Animal Conservation and Countryside Management for England – Level 5

6.2.3 Commissioning a new Pearson BTEC Higher National

You can ask us to develop a new qualification to meet your needs. You will need to fill in an application form explaining the reasons for your request. You must apply a full year ahead of the year in which you want to deliver the new qualification.

If we agree to your application, we will develop the new qualification in consultation with you.

We would be pleased to discuss your ideas for commissioning a new qualification. For more information, please see the custom-designed Higher Nationals section of our website at: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/building-a-bespoke-btec-higher-national-qualification.html.

6.3 Pearson-set units

Pearson-set units form part of the core units. Pearson will decide on a theme each year.

It is a formal requirement that you must:

- apply the theme to Level 4 and Level 5 units, and
- develop an assignment, to be internally assessed, to involve students in work related to the theme.

You will find support in the Pearson-set Assignment Guidance for the units, and the theme and topic release documentation, which will be provided for each level, on the HN Global website at: https://hnglobal.highernationals.com/.

The Pearson-set unit provides a common framework for centres to develop work that will allow us to:

- compare information across the sector, and
- identify and share best practice in higher education teaching and learning.

We will share the best practice results with all centres.

For more information about assessing Pearson-set units, please see *Section 7*.

6.4 Unit descriptor example

The unit descriptor is how we define the individual units of study that make up a Higher National qualification. Students will complete the units included in the programme that you offer at your centre (see *Section 11.0)*. We have described each part of the unit as follows:

Unit title	A general statement of what the unit will cover.
Unit code	The Ofqual unit reference number.
Unit type	There are three unit types: • core (mandatory) • specialist (mandatory) • optional (if any).
Unit level	All our Pearson BTEC Higher National units are at Levels 4 or 5.
Credit value	The credit value relates to the total qualification time (TQT) and unit learning hours (ULH). It is easy to calculate: • 1 credit = 10 ULH • 15 credits = 150 ULH. To complete a Higher National Certificate or Higher National Diploma, students must achieve all of the credits required. Refer to *Section 7.5* in the programme specification.
Introduction	Some general notes on the unit: • setting the scene • stating the purpose and aim, and • outlining the topics to be learnt and skills gained through the unit.
Learning Outcomes	These clearly explain what students will be able to do after completing the unit. There are usually four Learning Outcomes for each unit.
Essential Content	This section covers the content that students can expect to study as they work towards achieving their Learning Outcomes.
Learning Outcomes and Assessment Criteria	Tutors can refer to this table when grading assignments. The table connects the unit's Learning Outcomes with the student's work. Assignments can be graded at 'Pass' (P), 'Merit' (M) and 'Distinction' (D), depending on the quality of the student's work.
Recommended Resources	This section lists the resources that students should use to support their study for the unit. It includes books, journals and online material. The programme tutor may also suggest resources, in particular for local information. It may also contain delivery requirements e.g. specific equipment, case study material and learning resources, depending on the subject.

Table 4: Unit descriptor description

6.4.1 Web resources – referencing

Some units have web resources as part of their Recommended Resources list. Hyperlinking to these resources directly can cause problems, as their locations and addresses may change. To avoid this problem, we only link to the main page of the website and signpost students and tutors to the section where the resource can be found. Thereby, we have referenced web resources as follows:

[1] A link to the main page of the website

[2] The title of the site

[3] The section of the website where the resource can be found

[4] The type of resource it is, for example:

- research
- general reference
- tutorials
- training
- e-books
- report
- wiki
- article
- data sets
- development tool
- discussion forum.

Example

[1] https://cieem.net

[2] Chartered Institute of Ecology and Environmental Management

[3] Resource Hub

[4] (General reference)

Students and tutors must use a referencing system to cite and reference resources in an academic format.

7.0 Assessment

Pearson BTEC Higher Nationals are assessed using a combination of:

- centre-developed internal assignments that are set and assessed by centres, and
- Pearson-set assignments, which are set by centres in line with our guidelines and graded by centres.

Pearson-set units are mandatory and target particular industry-specific skills. The number and value of these units are dependent on qualification size. Furthermore:

- for the HNC, centres will assess one compulsory Pearson-set unit targeted at particular skills:
  - one Level 4 core unit carrying 15 credits
- for the HND, centres will assess two compulsory Pearson-set units targeted at particular skills:
  - one Level 4 core unit carrying 15 credits
  - one Level 5 core unit carrying 15 credits.

All other units are assessed through internal assignments set by the centre.

7.1 Principles of internal assessment

This section summarises the main features of internal assessment and explains how you can offer it effectively. Full details are given in the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment* handbook, downloadable in the enhanced quality assurance section of our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html. All of your assessment team will need to refer to this document.

For Pearson BTEC Higher Nationals, you must meet the expectations of stakeholders and the needs of students by providing a programme that is practical and applied. You can tailor programmes to meet local needs and should use links with local employers and the wider business sector.

Effective internal assessment is challenging, engaging, practical and up to date. It must also be fair to all students and meet national standards.

7.1.1 Assessment through assignments

For internally assessed units, assessment takes the form of an assignment carried out after the unit (or part of the unit if several assignments are used) has been delivered. An assignment may take a variety of forms, including practical and written. It is a distinct activity completed independently by students (alone or in a team). It is separate from teaching, practice, exploration and other activities that students complete with direction from tutors.

Students should receive each assignment as an Assignment Brief with a hand-out date, a completion date and clear requirements for the evidence they must provide. There may also be specific practical activities that the student must complete under tutor observation as part of the assignment. Assignments can be divided into separate parts and may require several forms of evidence. A valid assignment will enable a clear and formal assessment grade based on the assessment criteria.

7.1.2 Using unit-based criteria

You must base your assessment decisions for Pearson BTEC Higher Nationals on the specific criteria we have provided for each unit and grade level. We have based these criteria on a framework to make sure that standards are consistent in the qualification and across the whole range of qualifications. We have developed each unit to assess the student's understanding, practical skills and the vocational qualities necessary for the qualification.

The assessment criteria for a unit are based on a hierarchy. For example, if a Merit criterion requires the student to show 'analyses' and the related Pass criterion requires the student to 'explain', then to gain a Merit the student will need to cover both 'explain' and 'analyses'. The unit assessment grid shows the relationships among the criteria so that Assessors can apply all the criteria to the student's evidence at the same time.

Assessors must show how they have reached their decisions using the criteria in the assessment records. When a student has completed all the assessments for a unit, the assessment team can give a grade for the unit. This grade is based on the highest level the student is judged to have met for all the criteria.

- To achieve a Pass, a student must have met all the pass criteria for the Learning Outcomes, demonstrating that they have covered the unit content and achieved Level 4 or 5 of the national framework.
- To achieve a Merit, a student must have met all the Merit criteria (and the Pass criteria) through high performance in each Learning Outcome.
- To achieve a Distinction, a student must have met all the Distinction criteria (and the Pass and Merit criteria), demonstrating outstanding performance across the whole unit.

A Pass cannot be awarded just because the student has completed all the assignments. Students must meet all of the Pass criteria. If they do not, their grade should be reported as 'unclassified'.

7.1.3 The assessment team

You will need an effective team for internal assessment. There are three key roles involved, each with different responsibilities. These roles are listed below:

- The **Programme Leader** is responsible for the programme, its assessment and internal monitoring to meet our requirements. They must register with us each year. They are also responsible for:
  - record-keeping
  - liaising with the standards verifier
  - acting as an Assessor
  - supporting the rest of the assessment team
  - making sure that the team has the information it needs about our assessment requirements
  - organising training, and
  - using our guidance and support materials.
- **Internal Verifiers** oversee all assessment activity with the Programme Leader. They check that assignments and assessment decisions are valid and meet our requirements. All Internal Verifiers will follow the same standards and procedures as instructed by your Programme Leader. Internal Verifiers are usually also Assessors, but they do not verify their own assessments.
- **Assessors** set assignments or use assignments to assess students to national standards. Before taking any assessment decisions, they are trained by the Programme Leader to all work to the same standards and procedures. They also work with the Programme Leader and Internal Verifiers to make sure the assessment is planned and carried out in line with our requirements.

Our external examiner will sample student work across your Assessors. They will also want to see evidence of how you have verified assignments and will assess your decisions.

Full information is provided in the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, available in the enhanced quality assurance section of our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

7.1.4 Effective organisation

Internal assessment needs to be well organised so that you can track student progress and so that we can make sure your assessments are in line with national standards. It is particularly important that you manage the overall assignment programme and deadlines to make sure that all your students can complete their assignments on time.

When developing an overall plan for delivering and assessing your programme, you will need to consider:

- the order in which you deliver units
- whether delivery will take place over short or long periods of time, and
- when assessment can take place.

We support you in this through:

- assessment and feedback guidance documents available on HN Global, and
- training materials and sample templates for curriculum planning.

Please also see the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, available in the enhanced quality assurance section of our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

7.1.5 Preparing students

You need to make sure that your students understand their responsibilities for assessment and the centre's arrangements. From induction onwards, you will want to make sure that students are motivated to work consistently and independently to achieve their qualifications. They need to understand:

- how assignments are used
- the importance of meeting assignment submission deadlines, and
- that all the work submitted for assessment must be their own.

To support them, you should provide a guide that explains:

- how you use assignments for assessment
- how assignments relate to the teaching programme
- how to use and reference source materials, including how to avoid plagiarism, and
- your centre's approach to assessments – for example, how students must submit assignments, what happens if they submit late work and how they can request an extended deadline in special circumstances.

7.2 Formative assessment and feedback

7.2.1 Frequency and timing of formative assessment

Pearson does not define a minimum or maximum number of formative assessment points. However, students should have some formative assessment for each assignment in order to provide them with an understanding of their progress and to identify areas for continued development.

Formative assessment that is too frequent can be detrimental to students' development. On the one hand it will create an environment where students are working to produce *for* the formative assessment, rather than using the outcomes of formative assessment to support their learning and development towards the summative assessment. In addition, too much formative assessment risks becoming 'coaching' as students will have time to respond only to what has been indicated in formative feedback.

Therefore, the frequency of formative feedback should be considered carefully, as part of an overall curriculum plan, to occur at points where there is a clear benefit for the student in gaining further insight into their development and progress.

The timing of formative assessment should also be considered. Formative assessment that is too close to a summative assessment does not provide effective learning for the student. With limited time between formative and summative assessment there is less opportunity for the student to make effective use of the feedback from formative assessment to address any issues in the work towards summative assessment. Again, there is also a risk that the feedback from formative assessment becomes simply instructions (coaching) for the student.

Care should be taken to ensure that formative assessment takes place with sufficient time for the student to reflect on the feedback from the formative assessment and make whatever adjustments they deem necessary to improve their future work or performance towards summative assessment.

It is important to recognise that formative assessment can, in some cases, be continuous, depending on the learning and teaching strategy that has been adopted for a unit or programme. For example, where students may be undertaking a large project, which they are working on throughout the semester/term, you may have regular tutorials (either group or individual) to review work in progress and provide students with feedback that helps them to understand their progress and development. In this context, the tutorials are a form of continuous formative assessment. The feedback from these tutorials still needs to avoid coaching and tutors should plan for tutorials (formative assessment) to stop at a point where there is sufficient time before the summative assessment to make effective use of the feedback in the later tutorials.

Please also see the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, which can be found on our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

7.2.2 Formative feedback

While assessment and feedback always constitute a part of the student's learning, the purpose of assessment will vary, depending on when it is undertaken and the aim of the assessment activity.

Formative assessment feedback is given to students during the learning journey. This is to say that it relates to formative assessment that may be undertaken at any point prior to the summative assessment. Just as formative assessment is undertaken to support students to understand their progress, the associated feedback must be aimed at helping the student to recognise their current position and how to move forwards.

Formative assessment should always result in qualitative feedback, not a grade. When giving formative assessment feedback it is important to avoid giving students advice that directly informs the work that they may do for summative assessment. This is referred to as 'coaching' and is inappropriate. Feedback should provide students with general advice on how to progress in their studies, but should not tell them what to do. For example, a tutor might say:

"... your analysis of the research is not clear, you will need to look at the research more critically..."

rather than

"... what you should be writing is..."

In the former, the tutor is supporting the student to understand their current progress and how to improve, while the latter is 'coaching' the student.

Formative assessment can be either formal or informal. We might schedule specific points where students present work for formative assessment. Such instances can be valuable opportunities for group discussion and peer assessment. In such cases, it is expected that students will receive written formative assessment feedback. In other instances, the formative assessment feedback may be during tutorials or classroom activities.

Please also see the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, which can be found on our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

7.3 Making valid assessment decisions

7.3.1 Authentic student work

An Assessor must assess only student work that is authentic – in other words, the student's own independent work. Students must sign a declaration for each assessment to confirm that it is their own work. This declaration must confirm that:

- any evidence submitted for the assignment is the student's own, and
- the student understands that, if this is not the case, they may face penalties for malpractice.

Assessors must make sure that evidence is authentic by setting valid assignments and supervising students during the assessment period. Assessors must also take care not to provide direct input, instructions or specific feedback that may influence the student's work and final grade.

You can use Pearson templates or your own templates to document authentication.

If your Assessor suspects that a student's evidence is not authentic, they must take action in line with our policies for malpractice. Please see *Section 5.7* for more information.

7.3.2 Making assessment decisions using criteria

Assessors must use our criteria to make assessment decisions. They can judge the evidence from a student using all the relevant criteria at the same time but they must be satisfied that there is enough detailed evidence for each criterion required. For example, including a concluding section may not be enough evidence to meet the criterion requiring 'evaluation'.

Assessors should use the information and support available to help them reach their decisions. This includes:

- examples of moderated assessed work, and
- their Programme Leader and assessment team's experience.

7.3.3 Dealing with late assignments

For assessment to be fair, it is important that students are all assessed in the same way and that some students are not given an advantage by having extra time or the opportunity to learn from others. You should develop and publish your own regulations on late assignments and circumstances where you may agree to an extension.

Students must understand your policy on completing assignments by the deadlines you give them. You may agree to extend a deadline for a genuine reason such as illness in line with your centre policies. Please see *Section 5.6* for more information.

You can apply a penalty to assignments that are submitted late. To do this, you should:

- assess the assignment normally
- apply the penalty or cap to the grade awarded
- tell the student their uncapped grade to recognise the learning they have achieved and provide genuine assessment feedback
- record both the uncapped and capped grades, and
- have both grades verified by a suitable Assessment Board, taking into account any genuine reasons for the assignment being late.

Please also see the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, which can be found on our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

7.3.4 Providing assessment decisions and feedback

Once your assessment team has completed the assessment process for an assignment, they will provide a formal assessment decision. This should be recorded formally and reported to the student. The information given to the student:

- must show the formal decision and how it has been reached, including how assessment criteria have been met
- may show why they have not demonstrated achievement against assessment criteria
- must not provide feedback on how to improve evidence, and
- may provide feedback on how to improve in the future.

7.3.5 The opportunity to resubmit an assignment

If a student's assignment does not pass after the first assessment, they must have the opportunity to resubmit the assignment for reassessment. In this case:

- students can have the assignment reassessed once only
- if coursework and project-based or portfolio-based assignments need to be reassessed, this will usually involve carrying out the original activity again
- for examinations, reassessment will involve completing a new activity
- the grade for a reassessed assignment will be capped at a Pass, and
- assignments already graded at a Pass or higher cannot be reassessed.

7.3.6 Repeat units

If a student fails to achieve a Pass for a unit following reassessment, your Assessment Board may agree that they can repeat the unit. In this case:

- the student must pay the unit fee and study the unit again, with full attendance, and
- the grade for the unit (if successfully completed) will be capped at a Pass.

Students can repeat a unit once only.

7.3.7 Assessment boards

It is a formal Pearson requirement that centres hold an Assessment Board for all your Pearson BTEC Higher National programmes. The main purpose of an Assessment Board is to make recommendations on:

- the grades achieved by students on the units
- extenuating circumstances
- cases of cheating and plagiarism
- students progressing to the next stage of the programme
- the awards to be made to students, and
- students resubmitting assignments and repeating units.

Assessment Boards may also monitor academic standards. The main board meetings normally take place at the end of the session, but if your centre operates on a semester system there may be meetings at the end of the first semester. There may also be separate meetings to deal with referrals.

If you do not have an Assessment Board, our external examiner will discuss this with your quality nominee and Programme Leader. Assessment Board reports and minutes provide valuable evidence of your quality assurance processes.

7.4 Planning and record-keeping

For internal processes to be effective, your assessment team needs to be well organised and keep effective records. We will work closely with you to make sure you are meeting national standards. This process gives stakeholders confidence in your assessment approach.

Your Programme Leader must have an assessment plan, produced as a spreadsheet. This plan should include:

- the time required to train the assessment team and make sure they are working to the same standards and procedures
- the time available for teaching and carrying out assessments, including when students may complete assessments and when quality assurance will take place

- the completion dates for different assignments
- who is acting as Internal Verifier for each assignment and the date by which the assignment needs to be verified
- a procedure for Internal Verifiers to sample Assessors' decisions that covers all assignments, Assessors and a range of students
- a process to assess and verify students' work so that they receive formal decisions quickly, and
- a system for scheduling resubmissions.

The Programme Leader must also keep records of all assessments carried out. The key records are:

- checking of Assignment Briefs
- student declarations
- Assessor decisions on assignments, with feedback given to students, and
- confirmation of assessment decisions.

Examples of records and more information are available in the *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, available in the enhanced quality assurance process section of our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html.

7.5 Calculating the final qualification grade

7.5.1 Conditions for the award

7.5.1.1 Conditions for awarding our HNC

To achieve our Pearson BTEC Level 4 Higher National Certificate qualification, a student must have:

- completed units equivalent to 120 credits at Level 4, and
- achieved at least a Pass in 105 credits at Level 4.

7.5.1.2 Conditions for awarding our HND

To achieve our Pearson BTEC Level 5 Higher National Diploma qualification, a student must have:

- completed units equivalent to 120 credits at Level 5
- achieved at least a Pass in 105 credits at Level 5
- completed units equivalent to 120 credits at Level 4, and
- achieved at least a Pass in 105 credits at Level 4.

7.5.2 Compensation

7.5.2.1 Compensation for the HNC

Students who have attempted but not achieved a Pass in one of their Level 4 15-credit units can still be awarded an HNC as long as they have completed and passed the remaining units.

7.5.2.2 Compensation for the HND

Students who have attempted but not achieved a Pass in one of their Level 4 15-credit units and one of their Level 5 15-credit units can still be awarded an HND as long as they have completed and passed the remaining units at both levels as per the rules of combination of the required qualification.

7.5.3 Calculating the overall qualification grade

A student's overall qualification grade is based on their performance in all units. They are awarded a Pass, Merit or Distinction using the points gained through all 120 credits, at Level 4 for the HNC or Level 5 for the HND. The overall qualification grade is calculated in the same way for the HNC and the HND. For the HND, the overall qualification grade is based on student performance in Level 5 units only.

Students must have attempted all units in a valid combination for each qualification. The conditions of award and compensation arrangements will apply as explained above. If a student has been granted compensation for a unit attempted but not achieved, that unit will appear as unclassified (a 'U' grade) on the notification of performance provided with their certificate.

7.5.3.1 Points per credit

Grade	Points
Pass	4
Merit	6
Distinction	8

Table 5: Points per credit

7.5.3.2 Point boundaries

Grade	Point boundaries
Pass	420–599
Merit	600–839
Distinction	840+

Table 6: Grade point boundaries

7.5.4 Modelled student outcomes

7.5.4.1 Pearson BTEC Level 4 Higher National Certificate

	Credits	Level	Student 1			Student 2		Student 3		Student 4		Student 5	
			Grade point	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points
Core 1	15	4	4	P	60	P	60	D	120	D	120	D	120
Core 2	15	4	4	P	60	P	60	M	90	D	120	M	90
Core 3	15	4	4	P	60	P	60	D	120	D	120	M	90
Specialist 4	15	4	4	P	90	P	60	M	90	D	120	M	90
Specialist 5	15	4	6	M	90	P	60	M	90	D	120	D	120
Specialist 6	15	4	6	M	120	P	60	M	90	D	120	M	90
Specialist 7	30	4	6	M	120	M	90	D	120	D	120	D	120
Total	120	–	–	–	600	–	450	–	720	–	840	–	720
Grade	–	–	–	–	M	–	P	–	M	–	D	–	M

Table 7: Example HNC model outcomes

7.5.4.2 Pearson BTEC Level 5 Higher National Diploma

	Credits	Level	Student 1			Student 2		Student 3		Student 4		Student 5	
			Grade point	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points
Core 1	15	4	0	P	0	P	0	P	0	D	0	P	0
Core 2	15	4	0	P	0	P	0	P	0	D	0	M	0
Core 3	15	4	0	P	0	P	0	P	0	D	0	M	0
Specialist 4	15	4	0	P	0	P	0	M	0	M	0	M	0
Specialist 5	15	4	0	M	0	P	0	M	0	M	0	P	0
Specialist 6	15	4	0	M	0	P	0	M	0	D	0	U	0
Specialist 7	30	4	0	M	0	P	0	D	0	D	0	D	0
Core 8	15	5	6	M	180	P	60	D	90	D	0	D	120
Core 9	30	5	6	M	180	M	180	M	180	P	120	D	240
Specialist 10	15	5	6	M	90	M	90	M	90	P	60	D	120
Specialist 11	30	5	6	M	90	M	90	D	120	P	60	D	120
Specialist 12	30	5	6	M	90	P	60	D	120	P	60	D	120
Total	240	–	–	–	810	–	660	–	900	–	600	–	930
Grade	–	–	–	–	M	–	M	–	D	–	P	–	D

Table 8: Example HND model outcomes

The tables above are provided as general examples of using unit grades to calculate qualification grades. They do not reflect the specifics of this qualification.

8.0 Quality assurance

The quality assurance system for all Pearson BTEC Higher National programmes is linked to Level 4 and Level 5 of the Quality Assurance Agency (QAA) Framework for Higher Education Qualifications (FHEQ). This means that centres must have effective quality assurance processes to review their programme delivery. It also ensures that assessment grades are in line with national standards.

The quality assurance process for centres offering our Pearson BTEC Higher National programmes has five main features These are:

1. the approval process
2. monitoring internal systems
3. independent review of assessments
4. annual programme monitoring report
5. annual student survey.

8.1 The approval process

If you want to deliver our programmes at your centre, you must apply first through the existing centre approval process and then through the programme approval process. We can consider your application by:

- carrying out a desk-based review, or
- visiting your centre.

You will need to provide evidence that your centre:

- has the human and physical resources needed to deliver and assess the programme effectively
- understands the rules of independent assessment and agrees to follow them
- has a strong internal assessment system supported by 'fit for purpose' assessment documentation, and
- has a system to internally verify assessment decisions so that they are consistent across all Assessors and sites.

Your application must be supported by the Head of Centre (your principal or chief executive). It must include a declaration that you will operate the programmes strictly and in line with our requirements.

If your centre is already approved and you want to renew approval, you may be able to use our automatic approval process.

We may withdraw qualification or centre approval if we believe you can no longer quality assure your programme delivery or assessment standards.

8.2 Centre and qualification approval

As part of the approval process, your centre must meet the conditions listed below before offering the qualification:

- you must have suitable physical resources (for example equipment, IT, learning materials, teaching rooms) to support delivery and assessment of the qualifications
- you must provide the specific resources required for individual units
- staff involved in the assessment process must have relevant skills or experience
- you must have systems to provide continuing professional development for staff delivering the qualification
- you must have suitable health and safety policies for students and staff using equipment, and
- you must deliver the qualification in line with current equality legislation.

In this way, we can provide qualifications that meet the needs and expectations of students worldwide.

8.3 Monitoring internal systems

You will need to demonstrate that you continue to meet our centre approval criteria over time and across all Higher National programmes. This involves providing evidence to our external examiners for review.

Our examiners will check that:

- your systems and the way you use them remain suitable for supporting the programmes
- you apply student registration and appeals policies consistently, and
- you have effective internal examination and standardisation processes.

In some cases, you may present evidence of your operation within a recognised code of practice such as that of the Quality Assurance Agency for Higher Education. However, we may still want to confirm independently that these arrangements are operating to our standards.

If our examiners identify problems with your internal systems, we will take steps to help you correct them.

8.4 Independent review of assessments

The external examiner will review your internal assessments for all Pearson BTEC Higher National programmes benchmarked to Levels 4 and 5 of the Quality Assurance Agency (QAA) Framework for Higher Education Qualifications. They will either:

- confirm that your internal assessments meet national standards and allow certification, or
- provide actions to improve the quality of your assessments before allowing certification.

8.5 Annual programme monitoring report (APMR)

This annual review form gives you the opportunity to analyse and reflect on the most recent teaching year. It also provides us with information to help us improve the quality assurance of the Pearson BTEC Higher National programmes. An overview report is produced to outline the findings of the APMR each year.

8.6 Annual student survey

Pearson will conduct an annual survey of Pearson BTEC Higher National students. This provides us with a snapshot of every Higher National student's experience as part of the quality assurance process. Each centre with enough students taking part in the survey will get its own report about their results. You can access the report on HN Global at: http://hnglobal.highernationals.com.

8.7 Continuing quality assurance and standards verification

Each year we update our *BTEC Higher Nationals Centre Guide to Quality Assurance and Assessment*, available in the enhanced quality assurance section of our website: https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/about/quality-assurance-process.html. The handbook contains detailed guidance on the quality processes you should follow.

8.7.1 Our key principles of quality assurance

- A centre delivering Pearson BTEC Higher National programmes must be approved by us and must have our approval for the programmes or groups of programmes it is delivering.
- As part of gaining our approval, the centre agrees always to follow our terms and conditions for delivering programmes effectively and assessment quality assurance.

- You must follow agreed processes for:
    - planning, monitoring and recording assessment processes, and dealing with special circumstances, appeals and malpractice, and
    - making sure that assessors and verifiers all work to the same standards.
- We will work in partnership with you to help you achieve quality assured assessment.
- We will help you follow best practice and use suitable technology to support quality assurance processes.
- We will try to make sure our quality assurance processes do not create unnecessary administrative work for you.
- We will monitor and support you in achieving effective assessment and quality assurance.

We will do this by:

- making sure that you complete a suitable declaration at the time of approval
- carrying out approval visits to your centre
- making sure that you have a well-trained, effective team of assessors and verifiers
- sampling and verifying your assessments, assessed student work and other relevant documents, and
- reviewing your strategy for assessing and quality assuring your BTEC programmes.

As an approved centre, you must advertise your certification only with our permission and in line with our reporting requirements.

If you do not have and maintain a strong approach to quality assurance, you will not be able to apply for certification for any Pearson BTEC Higher National qualifications.

If you do not follow our recommendations for improving your quality assurance, we may withdraw approval for you to deliver our qualifications.

9.0 Recognition of prior learning and attainment

Recognition of prior learning (RPL) is a way of awarding credit if a student can demonstrate they meet the assessment requirements for a unit through knowledge, understanding or skills they already have. As long as the assessment requirements are met, RPL can be used to accredit a unit, units or a whole qualification.

RPL provides a route for recognising the achievements of continuous learning from a range of activities using any valid assessment procedure. We encourage you to recognise students' previous achievements and experiences at work, at home, in leisure and in the classroom. Evidence of learning must be valid and reliable.

For full guidance on RPL, please see *Recognition of prior learning policy and process*, which can be downloaded from the support section of our website: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

10.0 Equality, diversity and inclusion

Equality and fairness are central to our work. The design of these qualifications embeds equality, diversity and inclusion as set out in the qualification regulators' general conditions of recognition.

Promoting equality and diversity involves:

- treating everyone with equal dignity and worth, and
- raising ambitions and supporting achievement for people with different needs and backgrounds.

Creating an inclusive learning environment means anticipating students' varying needs and trying to make sure that all students have equal access to educational opportunities. This involves providing access for people who have differing individual needs and removing unnecessary barriers to learning. Qualification design must be inclusive so that students with and without disabilities have equal access to learning opportunities.

Our equality, diversity and inclusion policy requires that:

- all students have an equal opportunity to access our qualifications and assessments
- assessments should reflect the wide diversity of students, and
- our qualifications are designed and awarded in a way that is fair to every student.

We are committed to making sure that:

- students with a protected characteristic as defined by law (for example, race, sexual orientation, religion or belief) are not disadvantaged in comparison with students who do not share that characteristic
- all students achieve the recognition they deserve for taking a qualification, and
- this achievement can be compared fairly with the achievements of their peers.

Our qualifications should:

- be available to everyone capable of reaching the required standards
- be free from any barriers that restrict access and progress, and
- offer equal opportunities for all those who want to access them.

Please see our *Equity, diversity and inclusion in Pearson qualifications and related services policy*, downloadable from the support section of our website: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

Please use your integrity when recruiting students to our Pearson BTEC Higher National programmes. You should:

- make sure they have the information and advice they need about the qualification to be sure that it meets their needs
- check each student's qualifications and experience to make sure they have the potential to achieve the qualification, and
- for students with disabilities and specific needs, consider the support available to them and any other support they may need during teaching and assessment.

Please see our policy documents on students with particular needs.

10.1 Access to qualifications for students with disabilities or specific needs

Students can be assessed in a recognised regional sign language.

Further information on access arrangements can be found on the Joint Council for Qualifications (JCQ) website at: https://www.jcq.org.uk/exams-office/access-arrangements-and-special-consideration and in *A guide to the special consideration process – General and Vocational Qualifications,* downloadable at: https://www.jcq.org.uk/exams-office/access-arrangements-and-special-consideration/regulations-and-guidance. Details on how to make adjustments for students with protected characteristics are provided in *Supplementary Guidance for Reasonable Adjustment and Special Consideration in Vocational Internally Assessed Units*. See the support section of our website for both documents: https://qualifications.pearson.com/en/support/support-topics/understanding-our-qualifications/policies-for-centres-learners-and-employees.html.

11.0 Units included in the BTEC Higher Nationals in Animal Conservation and Countryside Management for England

Unit 1: Animal Health and Welfare

Unit code	**J/616/7828**
Unit type	**Core**
Unit level	**4**
Credit value	**15**

Introduction

The animal industry is made up of wide and varied businesses, including pet shops and veterinary surgeries caring for pets such as dogs, cats and rabbits, stables and farms housing horses and livestock, and zoos and wildlife parks caring for a range of wild and exotic animals. Knowledge of how to maintain animal health and how to maximise the welfare of animals across a range of different environments is a fundamental skill which underpins a successful career in the animal, equine and veterinary sectors.

Students will learn how to recognise signs of health and disease across a range of animal species, as well as how to manage animals to promote good health and prevent disease. Key diseases and parasites will be reviewed and interpretation of health in wild animals and animals housed in collections will be undertaken. Legislation which governs animal health will also be outlined.

In addition, students will learn how to measure and influence animal welfare for companion animals, livestock, horses, wildlife and animals in zoological collections, including how to conduct an animal welfare assessment. Positive and negative welfare states will be defined and the use of enrichment to enhance welfare will be discussed in detail.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Define causal pathogens and factors that can influence animal health and disease

LO2 Discuss the concepts of animal health and disease, and methods of disease prevention

LO3 Assess physiological, behavioural and physical measures of animal welfare

LO4 Evaluate changes to animal management systems to enhance animal welfare.

Essential Content

LO1 Define causal pathogens and factors that can influence animal health and disease

A review of a range of causal pathogens and diagnosis and control measures:

Viruses, bacteria, fungi and protozoa

Endo- and ectoparasites.

Differences between infectious, contagious and zoonotic diseases

Methods of disease transmission:

Direct transmission

Indirect transmission

Role of vectors.

Factors that influence health and disease:

Environment

Housing types

Management regimes

Social interaction

Stocking density

Immunity

Vaccination.

LO2 Discuss the concepts of animal health and disease, and methods of disease prevention

Control measures for common diseases:

Viruses, bacteria, fungi and protozoa

Endo- and ectoparasites

Vaccination

Notifiable diseases, reporting procedures and biosecurity.

Prevention of the spread of disease:

Monitoring health

Management

Isolation/quarantine

Euthanasia.

LO3 **Assess physiological, behavioural and physical measures of animal welfare**

Definition of eustress, stress and distress

Physiological measures of welfare assessment:

Role of the autonomic nervous system

Heart rate

Respiratory rate

Catecholamines

Hypothalamic-pituitary axis: glucocorticoid levels.

Behavioural measures of welfare assessment:

Changes in behaviour

Fear behaviour

Eating and drinking behaviour

Social interaction

Abnormal behaviour

Stereotypical behaviour

Preference testing.

Physical measures of welfare assessment:

Body condition score/weight

Productivity measures

Immune function

Disease prevalence

Mortality rates.

LO4 **Evaluate changes to animal management systems to enhance animal welfare.**

Key reasons for assessing animal welfare:

Ethics

Legislation

Productivity

Human-animal interaction.

Factors which can affect animal welfare:

Environment

Housing types

Management regimes

Enrichment

Social interaction

Stocking density.

Welfare assessment in a range of environments:

Companion animals/pets in home environment

Exhibited animals in animal collection and/or zoo environment

Farm animals

Laboratory animals

Wild animals.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Define causal pathogens and factors that can influence animal health and disease		
P1 Describe causal pathogens and discuss the difference between infectious and contagious diseases. **P2** Identify an infectious and contagious disease for a named animal species.	**M1** Discuss the impact of a named disease on animal health.	**D1** Evaluate environmental factors which can influence the risk of disease outbreaks in animals.
LO2 Discuss the concepts of animal health and disease, and methods of disease prevention		
P3 Describe signs of health across three animal species. **P4** Outline common signs of disease in animals.	**M2** Review three methods of disease prevention in animals.	**D2** Produce a management plan to prevent disease for a named animal species.
LO3 Assess physiological, behavioural and physical measures of animal welfare		
P5 Define physiological, behavioural and physical measures which can be used to assess animal welfare. **P6** Describe how physiological, behavioural and physical measures are used within animal welfare assessment.	**M3** Analyse the impact of external factors on animal welfare assessment.	**D3** Evaluate the importance of assessing animal welfare.
LO4 Evaluate changes to animal management systems to enhance animal welfare		
P7 Conduct an animal welfare assessment. **P8** Produce a management plan to enhance animal welfare for a named animal/named animals.	**M4** Justify the improvements suggested within the animal management plan.	**D4** Determine what effect the proposed changes will have on animal welfare.

Recommended Resources

Textbooks

Appleby, M.C. and Hughes, B.O. (2011) *Animal Welfare*. Wallingford: CAB International.

Barr, S.C. and Bowmann, D.D. (2001) *Canine and Feline Infectious Diseases and Parasitology*. Chichester: Wiley-Blackwell.

Broom, D.M. and Fraser, A.F. (2015) *Domestic Animal Behaviour and Welfare*. Wallingford: CAB International.

Coumbe, K. (2012) *Equine Veterinary Nursing*. 2nd Ed. New Jersey: Wiley-Blackwell.

Fraser, A.F. and Broom, D.M. (1990) *Farm Animal Behaviour and Welfare.* Wallingford: CAB International.

Hoston-Moore, P. and Hughes, A. (2007) *BSAVA Manual of Practical Animal Care*. Gloucester: BSAVA.

Mellor, D.J., Patterson-Kane, E. and Stafford, K.J. (2009) *The Sciences of Animal Welfare*. Oxford: Wiley-Blackwell.

Moberg, G. and Mench, J.A. (2000) *The Biology of Animal Stress: Basic Principles and Implications for Animal Welfare.* Wallingford: CAB International.

Williams, J. (2017) T*he Complete Textbook of Animal Health and Welfare*. Philadelphia: Saunders/Elsevier

Web

https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs	Department for Environment, Food and Rural Affairs (General reference)
www.woah.org	World Organisation for Animal Health (General reference)
www.ufaw.org.uk	Universities Federation for Animal Welfare (General reference)

Links

This unit links to the following related units:

Unit 6: British Wildlife

Unit 10: Wildlife Conservation

Unit 12: Habitat Restoration, Repair and Education.

Unit 2: Business and the Business Environment

Unit code	**L/616/7829**
Unit type	**Core**
Unit level	**4**
Credit value	**15**

Introduction

The aim of this unit is to provide students with background knowledge and understanding of land-based businesses, the functions of an organisation and the wider business environments in which organisations operate. Students will examine the different types of land-based organisations (including for-profit and not-for-profit), their size and scope (for instance, micro, small and medium-sized enterprises (SME), transnational and global) and how
they operate.

Students will explore the relationships that land-based organisations have with their various stakeholders and how the wider external environments influence and shape business decision-making.

The knowledge, understanding and skill sets gained in this unit will help students to choose their own preferred areas of specialism in future studies and in their professional career.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Explain the different types, size and scope of land-based organisations

LO2 Demonstrate the interrelationship of the various functions within a land-based organisation and how they link to organisational structure

LO3 Use contemporary examples to demonstrate both the positive and negative influence/impact the macro environment has on land-based business operations

LO4 Determine the internal strengths and weaknesses of specific land-based businesses and explain their interrelationship with external macro factors.

Essential Content

LO1 Explain the different types, size and scope of land-based organisations

Different types of organisations:

Differences between for-profit and not-for-profit and non-government organisations (NGOs)

Micro, small and medium-sized enterprises (SMEs): different business purposes, objectives and supply of goods and services

The range of legal structures associated with different forms of business: sole traders, partnerships and private limited companies.

Size and scope of organisations:

Differences between large, medium-sized and small organisations e.g. objectives and goals, market share, profit share, growth and sustainability

Global growth and developments of transnational, international and global organisations

Differences between franchising, joint ventures and licensing

Industrial structures and competitive analysis

Market forces and economic operations e.g. scarcity and choice, supply and demand, income elasticity

Stakeholders and responsibilities of organisations to meet different stakeholder interests and expectations.

LO2 Demonstrate the interrelationship of the various functions within a land-based organisation and how they link to organisational structure

The various functions within an organisation:

The role of marketing, financial management, setting up and managing budgets, human resource management and operations within an organisational context, and their interrelationships

How functions relate to overall organisation mission and objectives.

Organisational structure:

Different structures depending upon the size and scope of the organisation e.g. bureaucratic and post-bureaucratic, parent, strategic business units (SBUs), matrix and functional levels

Organisation structures and complexities of transnational, international and global organisations.

LO3 **Use contemporary examples to demonstrate both the positive and negative influence/impact the macro environment has on land-based business operations**

The context of the macro environment:

The application of the PESTLE framework and how organisations need to monitor and forecast external influences

How the macro environment influences/impacts upon business activities: the impact of the digital revolution on production and consumption, the impact of social technologies, cybersecurity, emerging BRICS markets, the global shift in economic and social power and ethical and sustainable growth

How organisations go through the transformation process and overcome resistance to change in response to the changing market environment.

LO4 **Determine the internal strengths and weaknesses of specific land-based businesses and explain their interrelationship with external macro factors.**

Frameworks for analysis:

Introduction to SWOT and/or TOWS analysis and how they can assist in the decision-making process within organisations

Key external macro factors e.g. the competitive environment and government intervention that influences organisations and businesses.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Explain the different types, size and scope of land-based organisations</td><td rowspan="5">LO1 and LO2

D1 Provide a critical analysis of the complexities of different types of business structures and the interrelationships of the different organisational functions.</td></tr>
<tr><td>P1 Explain different types and purposes of land-based organisations, public, private and voluntary sectors and legal structures.

P2 Explain the size and scope of a range of different types of land-based organisations.</td><td>M1 Analyse how the structure, size and scope of different land-based organisations link to the business objectives and products and services offered by the organisation.</td></tr>
<tr><td colspan="2">LO2 Demonstrate the interrelationship of the various functions within a land-based organisation and how they link to organisational structure</td></tr>
<tr><td>P3 Explain the relationship between different organisational functions and how they link to organisational objectives and structure.</td><td>M2 Analyse the advantages and disadvantages of interrelationships between organisational functions and the impact that can have upon organisational structure.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Use contemporary examples to demonstrate both the positive and negative influence/impact the macro environment has on land-based business operations		**LO3 and LO4** **D2** Critically evaluate the impacts that both macro and micro factors have upon business objectives and decision-making.
P4 Identify the positive and negative impacts the macro environment has upon business operations, supported by specific examples.	**M3** Appropriately apply the PESTLE model to support a detailed analysis of the macro environment within a land-based organisation.	
LO4 Determine the internal strengths and weaknesses of specific land-based businesses and explain their interrelationship with external macro factors		
P5 Conduct internal and external analysis of specific land-based organisations in order to identify strengths and weaknesses. **P6** Explain how strengths and weaknesses interrelate with external macro factors.	**M4** Appropriately apply SWOT/TOWS analysis and justify how they influence decision-making.	

Recommended Resources

Textbooks

Baron, P. (2012) *Business and Its Environment.* 7th Ed. London: Prentice Hall.

Palmer, A. and Hartley, B. (2011) *The Business Environmen*t. 7th Ed. Maidenhead: McGraw-Hill.

Weatherley, P. and Otter, D. (2014) *The Business Environment: Themes and Issues in a Globalizing World*. 3rd Ed. Oxford: Oxford University Press.

Worthington, I. and Britton, C. (2014) *The Business Environment*. 7th Ed. Harlow: Pearson.

Links

This unit links to the following related units:

Unit 3: Managing a Successful Project (Pearson-set).

Unit 3: Managing a Successful Project (Pearson-set)

Unit code	**F/616/7830**
Unit type	**Core**
Unit level	**4**
Credit value	**15**

Introduction

This unit is assessed by a Pearson-set assignment. The project brief will be set by the Centre, based on a theme provided by Pearson (this will change annually). The theme and chosen project within the theme will enable students to explore and examine a relevant and current topical aspect of business in the context of the land-based business environment.

The aim of this unit is to offer students an opportunity to demonstrate the skills required for managing and implementing a project. They will undertake independent research and investigation for carrying out and executing a business project that meets appropriate business aims and objectives.

On successful completion of this unit, students will have the confidence to engage in decision-making, problem-solving and research activities using project management skills. They will have the fundamental knowledge and skills to enable them to investigate and examine relevant business concepts within a work-related context, determine appropriate outcomes, decisions or solutions, and present evidence to various stakeholders in an acceptable and understandable format.

Please refer to the accompanying Pearson-set Assignment Guide and the Theme Release document for further support and guidance on the delivery of the Pearson-set unit.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Establish project aims, objectives and timeframes based on the chosen theme

LO2 Conduct small-scale research, information gathering and data collection to generate knowledge to support the project

LO3 Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis

LO4 Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance.

Essential Content

LO1 Establish project aims, objectives and timeframes based on the chosen theme

Project management:

What is project management and what does it involve?

The key stages of project management e.g. planning, risk assessment, financial management, resources, reporting, evaluation.

The advantages of using project management and why it is important.

Initiation of the project and project planning phase:

Scoping a project: defining objectives, scope, purpose and deliverables to be produced

Steps and documentation required in the initiation phase

Developing the project plan e.g. planning for timescales and time management, cost, quality, change, risk and issues

The work breakdown structure

Use of bar and Gantt charts for effective planning.

LO2 Conduct small-scale research, information gathering and data collection to generate knowledge to support the project

Project execution phase:

Selecting appropriate methods of information gathering, data collection and material resourcing

The distinct phases that support a coherent and logical argument

Use of secondary research to inform a primary empirical study

Qualitative and quantitative research methods.

Field work:

Selecting a sample of the consumer market, businesses or individuals (those who meet certain characteristics relevant to the research theme) to gather data (qualitative or quantitative)

Sampling approaches and techniques e.g. probability and non-probability sampling.

Ethics, reliability and validity:

All research should be conducted ethically: how is this achieved and reported?

Research should also be reliable (similar results achieved from a similar sample) and valid (the research should measure what it aimed to measure).

Analysing information and data:

Using data collection tools e.g. interviews and questionnaires

Using analytical techniques e.g. trend analysis, coding or typologies.

LO3 **Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis**

Communicating outcomes:

Consider the method (e.g. written, verbal) and the medium (e.g. report, online, presentation)

Both method and medium will be influenced by the project research and its intended audience.

Convincing arguments:

All findings/outcomes should be convincing and presented logically where the assumption is that the audience has little or no knowledge of the project process

Developing evaluative conclusions.

Critical and objective analysis and evaluation:

Secondary and primary data should be critiqued and considered with an objective mindset

Objectivity results in more robust evaluations where an analysis justifies a judgement.

LO4 **Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance**

Reflection for learning and practice:

The difference between reflecting on performance and evaluating a project: the former considers the research process, information gathering and data collection, the latter the quality of the research argument and use of evidence.

The cycle of reflection:

Reflection in action and reflection on action

How to use reflection to inform future behaviour, particularly directed towards sustainable performance.

Reflective writing:

Avoiding generalisation and instead focusing on personal development and the research journey in a critical and objective way.

Generalisation:

Many studies result in generalised findings; research based on a specific field e.g. human resource management (HRM) and in a specific context should avoid generalised conclusions

Outcomes should be specific and actionable.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Establish project aims, objectives and timeframes based on the chosen theme</td><td rowspan="5">LO1 and LO2

D1 Critically evaluate the project management process and appropriate research methodologies applied.</td></tr>
<tr><td>P1 Devise project aims and objectives for a chosen scenario.

P2 Produce a project management plan that covers aspects of cost, scope, time, quality, communication, risk and resources.

P3 Produce a work breakdown structure and a Gantt chart to provide timeframes and stages for completion.</td><td>M1 Produce a comprehensive project management plan, milestone schedule and project schedule for monitoring and completing the aims and objectives of the project.</td></tr>
<tr><td colspan="2">LO2 Conduct small-scale research, information gathering and data collection to generate knowledge to support the project</td></tr>
<tr><td>P4 Carry out small-scale research by applying qualitative and quantitative research methods appropriate for meeting project aims and objectives.</td><td>M2 Evaluate the accuracy and reliability of different research methods applied.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis		**LO3 and LO4** **D2** Critically evaluate and reflect on the project outcomes, the decision-making process and changes or developments of the initial project management plan to support justification of recommendations and learning during the project.
P5 Analyse research and data using appropriate tools and techniques. **P6** Communicate appropriate recommendations as a result of research and data analysis to draw valid and meaningful conclusions.	**M3** Evaluate the selection of appropriate tools and techniques for accuracy and authenticity to support and justify recommendations.	
LO4 Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance		
P7 Reflect on the value of undertaking the research to meet stated objectives and own learning and performance.	**M4** Evaluate the value of the project management process and use of quality research to meet stated objectives and support own learning and performance.	

Additional Evidence Requirements

In addition to the above assessment criteria, students will also be required to complete a project logbook to record ideas, changes and developments as they progress and complete the project.

Recommended Resources

Textbooks

Costley, C., Elliot, G. and Gibbs, P. (2010) *Doing Work Based Research: Approaches to Enquiry for Insider-researchers*. London: SAGE.

Flick, U. (2011) *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project.* London: SAGE.

Gray, D. (2009) *Doing Research in the Real World.* 2nd Ed. London: SAGE.

Saunders, M., Lewis, P. and Thornhill, A. (2012) *Research Methods for Business Students*. 6th Ed. Harlow: Pearson.

Links

This unit links to the following related units:

Unit 9: Research Project (Pearson-set).

Unit 4: Managing Environmental Resources

Unit code	**K/617/5369**
Unit level	**4**
Credit value	**15**

Introduction

Environmental sustainability is a key component in the goal towards managing environmental resources. Environmental sustainability relates to the need for maintaining and, where possible, improving the bio-systems of the Earth. These are the systems sustaining all life, i.e. the natural ecosystem. The way in which mankind interacts with this system is of primary importance in maintaining this natural ecosystem.

A core concept relates to the fact that resources harvested from the Earth are finite. These resources may be reused or recycled, in particular, when they have been mined. Renewable resources, such as crops, are not finite as they can be renewed but, equally, they cannot be consumed at a greater rate than they can be produced. All resources need appropriate and sympathetic management.

Environmental ecosystems also require consideration as a delicate network exists that connects and interacts with elements in the environment. Ecosystems, therefore, can be said to need biodiversity to function.

This unit will look at the management of environmental resources in terms of raw materials, energy, water resources, climate, biodiversity, pollutants and waste. It will also look at the overarching legislation and regulations currently in place and those proposed for future adoption. The effects of such management on an organisation will also be ascertained.

On successful completion of this unit, students will be cognisant of the potential impacts of consumerism, public attitudes and environmental matters on suppliers/producers. They will have an awareness of considerations needed when addressing the environmental credentials of products within their industry. This awareness will aid in the aim to adopt a more sustainable approach to the consumption and use of resources and appropriate management of waste.

Learning Outcomes

By the end of this unit, a student will be able to:

LO1 Explain the environmental issues connected with the biosphere

LO2 Identify the pressures on the environment from utilising finite resources

LO3 Identify the pressures on the environment from utilising renewable resources

LO4 Explore the challenges for manufacturers and businesses aiming to improve their environmental management credentials.

Essential Content

LO1 Explain the environmental issues connected with the biosphere

Concepts concerning the biosphere:

Defining the biosphere

Bioregions and biosphere reserves

Produce from the biosphere, including: timber; drugs and medicines (rainforest plant contribution)

Importance of biodiversity, including potential imbalance effects

Acoustic ecology

Anthropocene era

Cultural values

Carbon footprint.

Services provided by the biosphere:

Provision of nutrients

Clean air and absorption of CO_2

Control of the hydrological cycle.

Greenhouse gases causes and effects:

Human endeavours, including: industry; deforestation; population increases; acidification of the oceans

Agriculture, including: overfishing; overharvesting; livestock.

Potential impact and the causes of climate change:

Effects on nature, including: wildlife; sea levels; weather; natural flood controls; biodiversity; fire risks

Subsequent effects on: crops; food-chain; vulnerable populations; habitat adaptation.

LO2 **Identify the pressures on the environment from utilising finite resources**

Material resources and extraction:

Metal ore extraction, such as: aluminium (bauxite); copper; iron; lead; nickel; tin; precious metals

Mined materials, such as: salt; clays; potash; feldspar; quartz; lithium; bauxite (aluminium)

Fossil fuels, such as: coal; oil; gas; peat.

Processing:

Use of water in processing

Use of energy in processing

Use of heavy metals/toxins/chemicals during processing.

Environmental impact from extraction and processing:

Water pollution

Ocean acidification

Increased sediment in water courses

Metal contamination (heavy metals)

Soil contamination

Sinkholes

Greenhouse gas emissions

Air pollution

Loss of biodiversity

Noise pollution.

LO3 **Identify the pressures on the environment from utilising renewable resources**

Crops utilised as raw material for industry:

Timber and related products, such as: paper; rubber; wood; palm oil

Textile crops, such as: cotton; flax; coir; hemp

Biomaterials for plastics

Biomass for fuel

Food industry crops, such as: cereals; vegetables; fruits; nuts; oils (e.g. olive, sunflower, rapeseed, vegetable, coconut)

Animal husbandry:

Rearing of animals and their impact on the environment including; depletion of pasture lands; methane production.

Processing:

Use of water in processing

Use of energy in processing

Use of chemicals and other pollutants during processing.

Environmental impact from cultivation and processing:

Water pollution; consider e.g. the textile and paper industry

Water supply issues for local population

Increased sediment in water courses

Metal and chemical contamination

Soil contamination; consider e.g. over-farming; stripping of nutrients; salinisation of the soil; soil degradation

Desertification

Deforestation

Greenhouse gas emissions

Air pollution; consider processing plants

Loss of biodiversity particularly through stripping land for intensive farming of a single crop; consider e.g. palm oil production

Non-indigenous planting.

Renewable energy:

Sources of energy, including: hydroelectric; tidal; geothermal; ocean energy; biomass; bio-methane; solar; wind; wood and/or waste incineration; nuclear (note: the energy can be considered renewable technically but generally the overall production can be said to be non-renewable)

Issues relating to renewable energy, such as: land usage; emissions; sustainability; consistency of supply; development of fuel cells; development of increased battery power.

LO4 **Explore the challenges for manufacturers and businesses aiming to improve their environmental management credentials**

Environmental impact, including that of carbon footprint:

Production and manufacture, considering industries such as, but not limited to: textile; food; packaging; automotive; electrical and electronic; construction

Delivery of goods and services, including: transportation; logistical approach considering locality

Seasonality.

Approaches to consider from a manufacturers/business perspective:

Identifying the environmental impacts

Design approach, including: adoption of the concept of 'building to last'; recycling/disassembly potential; avoiding planned obsolescence

Minimising waste

Energy efficiency in production

Use of bio-refineries

Influence of costs/finances on the outcomes

Concepts of adopting a 'worldwide view'

Impact on business models

Resource efficiency

Biomimicry

The role of technology.

Waste and end-of-life issues and initiatives:

End-of-life usage and disposal

Retrieval of component parts

'Reuse, remanufacture, repair, recycle' model

Energy recovery

Directives targeted at particular goods such as electrical (WEEE directive)

The Waste and Resources Action Programme (WRAP)

Resources and waste strategy (UK).

Global environmental protocols and agreements:

International agreements, including the: Kyoto Protocol; Paris Accord; Greenhouse Gas Protocol

The politics and economics of sustainability

International frameworks, such as: United Nations strategies; European Union Emissions Trading Scheme; Sustainability forum such as COP21

Global conventions covering issues such as: marine life; atmosphere; noise pollution; fresh water

International specification – ISO 14001.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Explain the environmental issues connected with the biosphere		
P1 Explain the concept of an Anthropocene era and suggest whether this is a valid descriptor of the present era. **P2** Describe the importance of ocean health in maintaining and regulating the biosphere.	**M1** Assess the outcomes arising when an imbalance in the hydrological cycle occurs.	**D1** Investigate the issues surrounding climate change and the potential to limit its impact.
LO2 Identify the pressures on the environment from utilising finite resources		**LO2 and LO3** **D2** Investigate the impact on the environment on harvesting a given selection of finite and renewable resources and suggest ways by which their consumption might be managed.
P3 Identify the extraction methods and subsequent uses for two metal ores, two mined materials and two fossil fuels. **P4** Compare the water usage when processing a selection of at least three different types of finite resources and note the typical location of the processing plants of these materials.	**M2** Assess the use of shale gas as an energy source, including its advantages and disadvantages and the legislation and regulations surrounding its extraction.	
LO3 Identify the pressures on the environment from utilising renewable resources		
P5 Identify the use and disposal of chemicals in the processing of at least three different types of goods derived from renewable resources. **P6** Describe the issues associated with battery and fuel cell development.	**M3** Assess the impact on the land in the production of renewable resources.	

Pass	Merit	Distinction
LO4 Explore the challenges for manufacturers and businesses aiming to improve their environmental management credentials		
P7 Assess the importance of waste management in managing environmental resources. **P8** Describe the importance to a business of adopting a standard such as ISO 14001.	**M4** Evaluate the impact global environmental protocols and agreements have had on environmental sustainability.	**D3** Justify the steps that must be taken by a manufacturer or business in a given sector to improve its environmental management credentials.

Recommended Resources

Textbooks

Berners-Lee, M. (2010) *How Bad Are Bananas?* London: Profile Books Ltd.

Boyle, G., Open University. (2017) *Renewable Energy*. 4th Ed. Oxford: Oxford University Press.

Everett, B., Boyle, G. and Peake, S. (2011) *Energy Systems and Sustainability: Power for a Sustainable Future.* 2nd Ed. Oxford: Oxford University Press.

Fenner, A. and Ainger, C. (2013) *Sustainable Infrastructures: Principles into Practice*. London: ICE Publishing.

Helm, D. (2015) *The Carbon Crunch: Revised and Updated*. 2nd Ed. New Haven, CT: Yale University Press.

Web

biospherejournal.org	UNESCO Biosphere Journal
	UNESCO Biosphere Reserve Management
	Evaluation: where do we stand and what's next?
	(Article)
consultancy.uk	Consultancy UK
	Circular economy in materials needed for sustainable growth
	(Article)
cop21paris.org	COP21
	(General reference)
fairplanet.org	Fair Planet
	Cradle to cradle – a concept for an ideal circular economy
	(Article)
ghgprotocol.org	Greenhouse Gas Protocol
	(General reference)
gov.uk	UK Government
	Resources and Waste Strategy
	(Report)

lrqa.co.uk	Lloyd's Register ISO 14001: Environmental Management System Standards (General reference)
nationalgeographic.org	National Geographic Biosphere (General reference)
populationinstitute.org	The Population Institute Demographic Vulnerability Report (Report)
stockholmresilience.org	Stockholm Resilience Centre News about Biosphere (Research)
un.org	United Nations Integrating Population Issues into Sustainable Development (Report)
wrap.org.uk	The Waste and Resources Action Programme (Report)
wri.org	World Resources Institute Managing environmental impact (General reference)

Links

This unit links to the following related unit:

Unit 5: Principles of Ecology and their Applications

Unit 7: Practical Conservation and Land Management.

Unit 5: Principles of Ecology and their Applications

Unit code	**D/617/5367**
Unit level	**4**
Credit value	**15**

Introduction

The principles of ecology are the building blocks that form and shape our natural world. Ecology is the science behind the complex interactions between organisms and their environment. The outcomes of these interactions alter and affect the delicate balance of life.

Organisms survive as populations and communities of individuals whose success or failure is governed by the environment in which they reside. These natural processes can be broken down into the physical and the biotic components that interact to form an ecosystem or biome. Their stability is fragile, and change can have severe consequences to the species and organisms that call that ecosystem home. Anthropogenic disturbance and environmental pressures have a negative effect on the natural world, while there is increasing recognition that nature and green spaces are beneficial to health and well-being. Global biodiversity loss due to declines in abundance and distribution of species and habitats are increasing concerns.

This unit will outline the factors that influence life on Earth and explain the theory behind these interactions. The students will apply this theory to assess the composition and functionality of real-world ecosystems, interpreting disturbance and evaluating strategies aimed at reversing decline. Students will be able to identify the causes of degradation and exploitation, while exploring how recognition of the value of natural resources could be used as a tool to help drive the success of restoration methods and conservation techniques.

Learning Outcomes

By the end of this unit, a student will be able to:

LO1 Explain how ecology is the study of interactions between organisms and their environment

LO2 Identify a variety of biomes and interpret their differences

LO3 Explain the factors that disturb the ecological balance in a given ecosystem

LO4 Explore ways to restore the balance in a degraded ecosystem.

Essential Content

LO1 **Explain how ecology is the study of interactions between organisms and their environment**

Organisms:

Evolution

Natural selection

Biological fitness

Taxonomy

Flora and fauna.

The physical components to the environment:

Environmental variation, i.e. climate

Water properties; water availability; plants and water; and animals and water

Responses to temperature; temperature and species distribution

Soil acidity

Geomorphology: physical, chemical and biological processes

Nutrients: sources and cycles; soil formation, properties and classification; and plants

Global biogeochemical cycles, i.e. carbon, water, nitrogen.

The biotic components to the environment:

Competition: the nature of competition; intraspecific competition, predation and parasitism

Trophic levels and relationships (species interactions)

Population ecology: populations; population structure; population growth; mortality; natality; density; population dynamics (fluctuations and cycles)

Community ecology: the community; structure and stability; community patterns; community response to disturbance.

LO2 **Identify a variety of biomes and interpret their differences**

Surviving with stress and thriving without stress:

Adaptation to environmental variation

The ecological niche

Habitat

Speciation

Succession

Colonisation

Introduced species.

Examples of terrestrial and marine biomes across Earth:

Terrestrial biomes: temperate deciduous forest, coniferous forest, woodland, tundra, grassland, desert, tropical savanna and tropical forest

Marine biomes: oceanic and coral reef.

Isolated ecosystems and communities:

Extreme competition

Specialisation

Biogeography

Island communities.

LO3 **Explain the factors that disturb the ecological balance in a given ecosystem**

Anthropogenic disturbance:

Pollution

Global warming

Habitat encroachment

Exploitation of resources (nutrients, water and energy use)

Intensive land management

Unsustainable extraction

Species removal through poaching.

Changes to the physical environment:

Climate change

Erosion

Eutrophication.

LO4 **Explore ways to restore the balance in a degraded ecosystem**

Conservation:

Reducing disturbance

Protection, i.e. environmental policy and wildlife legislation

Mitigation

Reintroductions.

Restoration:

Restoring natural processes.

Appreciation and recognition:

Natural capital

Paying for ecosystem services

Corporate social responsibility.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Explain how ecology is the study of interactions between organisms and their environment</td><td rowspan="2">D1 Provide an evaluation of the physical and biotic factors which enable the existence and function of a given ecosystem.</td></tr>
<tr><td>P1 Define an organism and its role within an ecosystem.
P2 Explain the physical components of the environment and explore the effect they have upon an ecosystem.
P3 Explain the biotic components of the environment and explore the effect they have upon an ecosystem.</td><td>M1 Analyse how the interactions between the physical and biotic components of an ecosystem determine the success of an organism or species.</td></tr>
<tr><td colspan="2">LO2 Identify a variety of biomes and interpret their differences</td><td rowspan="2">D2 Compare two specific biomes and analyse their differences.</td></tr>
<tr><td>P4 Identify a species that is an intrinsic part of a biome and describe its role.
P5 Outline the environmental components which enable the existence of any given functioning biome.
P6 Identify and describe the environmental components of a biome in either an extreme environment or an isolated location.</td><td>M2 Differentiate the environmental components which define two separate biomes.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Explain the factors that disturb the ecological balance in a given ecosystem		
P7 Explain the negative anthropogenic impact on any given ecosystem. **P8** Explain the effect of changes to the physical environment on an ecosystem.	**M3** Analyse the exploitation of natural resources.	**D3** Evaluate the future cost of continuing to exploit natural resources.
LO4 Explore ways to restore the balance in a degraded ecosystem.		
P9 Explain conservation measures currently in practice to reduce loss and degradation of the natural environment. **P10** Explain restoration techniques currently in practice to restore degraded habitats. **P11** Outline the theory of natural capital and ecosystem services.	**M4** Analyse the importance of restoring natural processes in selecting viable methods to minimise degradation.	**D4** Explore, making justified recommendations, how the appreciation of natural assets could help drive conservation and restoration work of the future.

Recommended Resources

Textbooks

Allaby, M. (2010) *A Dictionary of Ecology*. 4th Ed. Oxford: Oxford University Press.

Begon, M., Howarth, R. and Townsend, C.R. (2014) *Essentials of Ecology*. 4th Ed. Oxford: John Wiley & Sons Ltd.

Begon, M., Townsend, C.R. and Harper, J.L. (2006) *Ecology from Individuals to Ecosystems*. 4th Ed. Oxford: Blackwell Publishing.

Mackenzie, A., Ball, A.S. and Virdee, S.R. (2001) *BIOS Instant Notes in Ecology*, 2nd Ed. Abingdon: Taylor & Francis Group.

Web

britishecologicalsociety.org	British Ecological Society Learning and Resources (Research)
cell.com	Trends in Ecology and Evolution Journal (Articles)
cieem.net	Chartered Institute for Ecology and Environmental Management Training & Events, Publications (Training, Articles)
gov.uk	Natural England Wildlife and Habitat Conservation (Research)
iucn.org	International Union for the Conservation of Nature Resources (General reference)
jncc.defra.gov.uk	Joint Nature Conservation Committee UK Habitats, UK Species Research, Legislation & Policy, Protection (Discussion Forum)
magic.defra.gov.uk	MAGIC Map DEFRA Get Started (Datasets, Development tool)

Links

This unit links to the following related units:

Unit 10: Wildlife Conservation.

Unit 6: British Wildlife

Unit code	**D/650/4373**
Unit level	**4**
Credit value	**15**

Introduction

The aim of this unit is to develop understanding of British wildlife. By studying the current and historical population and distribution of British wildlife, students will understand the threats to it and the measures that can be taken through conservation, including practical habitat management, rehabilitation and rewilding, to ensure its proper place in the British landscape.

This unit will appeal to those who wish to work in conservation management as well as those working in other land-based activities who would like to ensure that environmental sustainability and British wildlife diversity is a high priority.

On successful completion of this unit, students will be able to use and understand a variety of scientific and conservation classifications to identify threatened British wildlife. They will be able to consider the strategies for conservation based on historical research and current practice using integrated management that reflects the complexity of habitat and species relationships.

Learning Outcomes

By the end of this unit students will be able to:

LO1 Use different classification systems to identify British wildlife

LO2 Examine the changing history of British wildlife

LO3 Investigate the management of British wildlife species and their habitats

LO4 Carry out and review habitat activities and conservation of threatened British wildlife.

Essential Content

LO1 Use different classification systems to identify British wildlife

Taxonomy based on binomial nomenclature

Use of generic and specific names, italics e.g. *Vulpes vulpes.*

International codes e.g. International Code of Zoological Nomenclature (ICZN).

Classification systems

Classification based on structure/morphology e.g. Linnaean taxonomy of rank based scientific classification, including domain, kingdom, phylum, class, order, family, genus, species.

Classification based on evolutionary taxonomy e.g. clades, cladograms, derived characters, DNA.

Conservation-based classification

Classification based on conservation status e.g. IUCN Red List, CITES.

Classification based on strategic species e.g. flagship, keystone, indicator species.

Comparison and use of different classification systems

Comparison between clades and traditional taxonomic groups.

Relevance of conservation-based classification.

Identifying wildlife

Use of field guides, identification keys.

LO2 Examine the changing history of British wildlife

Influence of natural processes on current and historical wildlife populations and distribution

Geomorphological and geological processes e.g. plate tectonics, erosion and deposition in landscapes

Natural climate change e.g. due to ocean currents, volcanic activity, solar insolation, global and local changes in temperature, rainfall affecting seasonality on wildlife species populations and distributions.

Influence of human activity on current and historical wildlife populations and distribution

Historical human influences on post-glacial UK landscape e.g. population increase and migrations, deforestation/afforestation, changing agricultural practice; positive and negative impacts

Change in social and cultural values and opinions regarding British wildlife e.g. influence of attitudes to countryside sports, leisure, recreation, conservation; developing public opinion through the role of the media and pressure groups to influence decision makers

Changing political influences e.g. legislative change, farm subsidies for production or environmental benefit

Current ecological change through human activity e.g. climate change, pollution, use of renewable/non-renewable resources, adoption of sustainable landscape solutions; advantages and disadvantages of changing human activity for wildlife.

Use of primary and secondary data sources to inform investigations of the changing history of British wildlife

Historical sources e.g. climate records, enclosure acts, land drainage/ clearance records, mineral extraction, urban growth, population change; use of archaeological findings for human diet/pollen/bone analysis

Use of long timescale species surveys to evidence wildlife change e.g. British Trust for Ornithology (BTO) Heronries Census (1928), United Kingdom Butterfly Monitoring Scheme (UKBMS) (1976), Wytham Woods Great Tit Study (1947).

Use of primary survey data e.g. public opinion surveys, habitat/species surveys.

LO3 **Investigate the management of British wildlife species and their habitats**

Habitat management and protected status

Strategies to protect habitats and species e.g. Sites of Special Scientific Interest (SSSIs), Biodiversity Action Plan (BAP) protected habitats, National Parks, Ramsar sites, European Protected Species (EPS).

Aims and objectives of protected status for habitats and species.

Wildlife and countryside legislation and funding

Wildlife and Countryside Act 1981, government, national, charitable and local funding for conservation purposes e.g., Countryside Stewardship, farming subsidies, developer contributions, lottery funding.

Integrated management of British wildlife

Understanding complex habitat/wildlife/human interactions

Resources for habitat/species management e.g. People's Trust for Endangered Species (PTES), Natural England Technical Information Notes (TIN), Natural England Species Information Note (SIN), Natural England Evidence Information Note (EIN) publications

Comparison of species vs habitat management strategies

Developing a species/habitat integrated management plan, including e.g. rehabilitation/rewilding, surveys, practical activities, monitoring, funding, health and safety, legislation, licensing.

LO4 Carry out and review habitat activities and conservation of threatened British wildlife

Researching to inform conservation of threatened British wildlife species

Surveys to inform wildlife conservation, including habitat, species, public opinion

Researching best practice to inform conservation planning e.g. case studies for selected species, habitats.

Rehabilitation/rewilding strategies

Licensing, regulations and guidance, nursing and care of target species, soft vs hard release, stages of release, monitoring, remedial action

Habitat management to support species conservation

Habitat planning and activities to support wildlife conservation

Practice safe working in line with legislation e.g., hazard/risk identification, risk assessment, risk mitigation, complying with control measures

Comply with industry regulations and standards, organisational policies, procedures and professional codes and ethics

Correct selection of tools, equipment and materials to ensure safe and efficient working

Instruct others how to use tools and machinery correctly and safely and ensure operator competence

Personal protective equipment (PPE) and risk assessments; safe working practices e.g. safety boots, gloves; static/dynamic risk assessment; lone working, working near water

Consequences of improper selection and use of tools, equipment and materials, including PPE e.g. increased risk, inefficient working

Use of volunteer organisations e.g. The Conservation Volunteers (TCV).

Monitoring habitat and species management planning and activities

Monitoring activities to evaluate results of habitat and species conservation

Extrapolation of short-term monitoring to long-term goals

Links to local/national monitoring programmes

Remedial activities arising out of monitoring e.g. reviewing protection from predators, restricting unexpected public access to sensitive sites, replanting/ replacing key plant species to ensure continuity of food supply for target species.

Evaluation of habitat and species management planning, activities and monitoring

Measuring success of conservation work and documenting impact to determine whether conservation work should continue, be adapted, stopped; identification of points of success and failure; accountability for activities and outcomes

Monitoring and evaluation activities e.g. defining project success, including the identification of project aims and desired changes; monitoring activities to measure changes, including identification of approach and method(s); evaluation activities to determine cause(s) of change in conservation outcomes reporting project success to document the degree of impact achieved; identification of best practice and opportunity to adapt approach to develop improved conservation strategies

Reflective practice, including feedback e.g. self-evaluation, peer and expert

Reflective practice tools e.g. Schön (1991) Reflection in Action and Reflection on Action, Kolb's Model of Experiential Learning (1984), Rolfe, Freshwater and Jasper 'What' Model (2001), Gibbs' Reflective Cycle (1998).

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Use different classification systems to identify British wildlife</td><td rowspan="5">LO1 and LO2

D1 Evaluate, for a named, threatened British animal species, its changing historical genesis using classification systems based on taxonomy and the factors that have affected its population and distribution.</td></tr>
<tr><td>P1 Explain, for a range of threatened British animal species, their classification using a system based on morphology/structure and evolutionary principles.

P2 Explain, for a named threatened British animal species, its classification using a system based on conservation principles.</td><td>M1 Analyse the use of traditional, evolutionary and conservation classification for a named, threatened British animal species.</td></tr>
<tr><td colspan="2">LO2 Examine the changing history of British wildlife</td></tr>
<tr><td>P3 Explain, for a named, threatened British animal species, the physical factors that account for its historical and current variation in population and distribution.

P4 Explain, for a named, threatened British animal species, the human factors that account for its historical and current variation in population and distribution.</td><td>M2 Assess the use of data in determining the factors that account for variation in the historical and current population and distribution of a named, threatened British animal species.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Investigate the management of British wildlife species and their habitats		**LO3 and LO4** **D2** Evaluate own integrated planning, practical activities and monitoring for the conservation, rehabilitation or rewilding of a named and located, threatened British wildlife species.
P5 Describe how legislation, licensing and directives can protect British habitats and species. **P6** Compile, for a named, threatened British wildlife animal species, an integrated management strategy for its conservation.	**M3** Analyse how primary and secondary research-based data can inform own integrated management strategy for a named, threatened British wildlife animal species.	
LO4 Carry out and review habitat activities and conservation of threatened British wildlife		
P7 Carry out practical habitat and species activities to facilitate wildlife conservation as part of an integrated management plan. **P8** Undertake British wildlife rehabilitation or rewilding according to an agreed integrated management plan. **P9** Reflect on own practical activities to facilitate wildlife conservation, rehabilitation or rewilding.	**M4** Analyse own integrated management plan for a named and local, threatened wildlife species.	

Recommended Resources

Textbooks

Agate, E. (2010). *Fencing: A Practical Handbook*. Doncaster: British Trust for Conservation Volunteers.

Bright, P., Morris, P. and Mitchell-Jones, A. J. (2006). *The Dormouse Conservation Handbook*. Peterborough, England: English Nature.

Brooks, A. and Agate, E. (2008). *Hedging: A Practical Handbook*. British Trust for Conservation Volunteers.

Morris, P. (2018). *Hedgehog*. London William Collins.

Wallace, H. and Duffell, M. (2016). *Plant Identification for Phase 1 Habitat Survey: Grassland and Marsh*. Telford: Field Studies Council.

Other

Farley-Brown, R. and Harper, L. (2018). *Guide to Flowers of Walks and Waysides*. Telford: Field Studies Council Publications.

Farley-Brown, R. and Roberts, C. (2012). *Guide to the land mammals of Britain*. Telford: Field Studies Council Publications.

Illustrated Guide to Managing Neutral Pasture for Wildlife, TIN088 [online]. Natural England.

Websites

academia.edu	Animal management and British wildlife reference resource (General Reference)
britishhedgehogs.org.uk	The British Hedgehog Preservation Society (General Reference)
bto.org	British Trust for Ornithology (General Reference)
field-studies-council.org	Field Studies Council (General Reference)
gov.uk	Wildlife licences – Licences are issued by government agencies to permit activities that would otherwise be illegal. For example, licences may be issued to allow disturbance to species or damage to their habitats. (General Reference and Application)
gov.uk	Natural England (General Reference)
panda.org	World Wildlife Fund (WWF) (General Reference)
ptes.org	People's Trust for Endangered Species (PTES) (General Reference)
publications.naturalengland.org.uk	Natural England – access to evidence (General Reference)
tcv.org.uk	The Conservation Volunteers (General Reference)
wildlife.onlinelibrary.wiley.com	The Wildlife Society (General Reference)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 5: Principles of Ecology and their Applications

Unit 10: Wildlife Conservation

Unit 12: Habitat Restoration, Repair and Education.

Unit 7: Practical Conservation and Land Management

Unit code: J/651/3880

Unit level: 4

Credit value: 30

Introduction

Conservation, land and habitat management is becoming increasingly important as governments commit to improve the environment over the coming years. Environmental legislation can be used to set targets to ensure that plants and wildlife are thriving and biodiversity is enhanced. As such, the conservation, land and habitat management industries are large, expanding and diversifying sectors. With this growth comes an abundance of career opportunities and job roles.

This unit will introduce students to a range of practical land and habitat management techniques, such as felling, coppicing and the management of vegetation and invasive species, that are integral to the conservation of species and habitats. Students will also gain experience in the construction and management of assets and infrastructure such as footpaths, boundaries, ramps and stiles. They will carry out a wide range of practical conservation and land management work to create, maintain and improve habitats to protect species and increase biodiversity.

Students will explore a range of ecological survey techniques that can be used to assess different types of habitat, species numbers and biodiversity. They will evaluate and report their findings in relation to current and future habitat management practices by producing habitat and species action plans.

With an understanding of the industry, students can research a wide range of organisations, including local authorities, small and medium businesses, national and local charities and National Park authorities, to consider their own preferred career pathways in readiness to formulate a strategic career plan.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Demonstrate land and habitat management techniques for a range of habitats and species to comply with relevant legislation

LO2 Demonstrate management and construction of a range of infrastructure assets

LO3 Plan ecological surveys for habitats and species to gather reliable and valid data

LO4 Conduct ecological surveys based on sound ecological principles and in line with relevant legislation.

Essential Content

LO1 Demonstrate land and habitat management techniques for a range of habitats and species to comply with relevant legislation

Legislative considerations:

Health and safety e.g. the Health and Safety at Work etc. Act 1974 (HASAWA), Control of Substances Hazardous to Health Regulations 2002 (COSHH), Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR), Provision and Use of Work Equipment Regulations 1998 (PUWER), personal protective equipment (PPE), manual handling activities

Key national environmental legislation e.g. the Environmental Improvement Plan, Conservation of Habitats and Species Regulations 2017, Environment Act 2021, Environment Bill 2020, biodiversity net gain (BNG)

Land and wildlife designations e.g. National Parks, Areas of Outstanding Natural Beauty (AONBs), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Ramsar Sites, Special Areas of Conservation and Special Protection Areas, National Red Lists, protected species

Permissions and licences relevant to the management of habitats and species and other countryside management works.

Risk management and assessment:

Why carry out risk assessment

The role of the Health and Safety Executive (HSE) in promoting, regulating and enforcing workplace health, safety and welfare

Workplace policies and procedures, industry regulations/standards, organisational policies/procedures, professional codes

Methods of risk assessment

Conduct and implement risk assessments to include identifying hazards and risks, control measures

Assess, prioritise, maintain and evaluate safe working environments.

Planning for, and carrying out, safe habitat and species management techniques:

Felling

Pruning

Planting

Cutting

Mowing

Coppicing

Thinning

Spraying and uprooting

Livestock grazing

Controlling vegetation and invasive species e.g. Japanese knotweed, Himalayan balsam, American lobster

Notifiable diseases in plants and animals, reporting procedures, the role of the Animal and Plant Health Agency (APHA), Department for Environment, Food and Rural Affairs (Defra), Border Force and biosecurity e.g. bird flu, Phytophthora and ash dieback

Best practice for a range of habitats and species and how to balance conflicting needs

Relevant authorities and how to engage, communicate with and seek advice from them

Assessing, organising and prioritising activities

Accounting for the local area, habitat, flora, fauna and level of associated protection

Identifying and allocating resources, time and budgetary constraints

Working independently, teamwork, supervising, team leading, motivating, allocating work, delegation

Workload management

Expected workplace behaviours e.g. self-discipline, self-motivation, proactive and positive approach, consideration of others' perspectives, problem solving, decision-making, self-awareness, seeking and responding to feedback

Working outside in inclement weather conditions

Ethical considerations.

Machinery, tools and equipment:

Correct and safe use of machinery e.g. four-wheel drive vehicles, tractors, trailers, winches

Correct and safe use of a range of tools and equipment e.g. powered and non-powered tools such as chainsaws, brush cutters, hedge trimmers and hand tools; mobile devices and other technology e.g. GPS, tablets, cameras

Instruct others how to use tools and machinery correctly and safely to ensure operator competence

Awareness and completion of relevant records associated with the use of tools and machinery e.g. inspection, service, maintenance, use, vibration and noise levels.

Self-evaluation and reflection:

Reasons for, and benefits of, self-evaluation, review and reflection

How to effectively describe personal experiences

Evaluating experiences through identification of areas of strength and weakness

Concluding what was learnt and what may be done differently

Creating action plans to improve future performance

Setting SMART (specific, measurable, achievable, realistic, timely) targets.

LO2 **Demonstrate management and construction of a range of infrastructure assets**

Legislative considerations:

Current legislation, planning regulation and legal processes and procedures in relation to managing public rights of way and other public access, including:

- Highways Act 1980
- Countryside and Rights of Way Act 2000
- Countryside Code
- Wildlife and Countryside Act 1981
- definitive maps and statements
- workplace policies and procedures, industry regulations/standards, organisational policies/procedures, professional codes.

Design, construction, assessment and management of assets and infrastructure:

Steps

Ramps

Gates

Stiles

Bridges and drainage

Boundaries e.g. fences, walls and hedges

Public access routes e.g. public rights of way and permissive access

Comply with legal requirements, industry regulations/standards, organisational policies/processes, professional codes and ethics

Relevant authorities and how to engage, communicate with and seek advice from them

Assessing, organising and prioritising activities

Identifying and allocating resources, time and budgetary constraints

Working independently, teamwork, supervising, team leading, motivating, allocating work, delegation

Workload management

Expected workplace behaviours e.g. self-discipline, self-motivation, proactive and positive approach, consideration of others' perspectives, problem solving, decision-making, self-awareness, seeking and responding to feedback

Working outside in inclement weather conditions.

Other considerations:

Type of asset

Usage, accessibility, safety

Cost, budget, funding, planning

Lifespan

Historic value

Relationship with landscape

Terrain

Regional character

Sustainability targets and practices

Waste management practices

Biodiversity net gain targets.

LO3 **Plan ecological surveys for habitats and species to gather reliable and valid data**

Planning and survey design:

Hypotheses

Objective setting and purpose

Data collection

Timing

Equipment requirements

Methodology

Risk assessment

Health and safety

Legislative compliance, codes of practice and licensing requirements

Workplace policies and procedures, industry regulations/standards, organisational policies/procedures, professional codes

Assessing, organising and prioritising activities

Identifying and allocating resources, time and budgetary constraints

Conservation planning and strategies

Appropriateness of surveys, and the techniques and technology used in their implementation, for habitats and species, visitors or volunteers, assets and access work

Ethical considerations.

Sampling methods:

Random

Systematic

Stratified.

Survey methods:

Quadrats

Line and belt transects

Phase 1 habitat survey

National Vegetation Classification (NVC) surveys

Measuring abiotic factors e.g. soil moisture, soil pH, temperature, humidity, light intensity

Remote sensing

Camera trapping

Radio telemetry

The use of artificial intelligence (AI)

Mammals e.g. footprint tunnels, tracks and signs, hair tubes, trapping, mark–release–recapture

Acoustic surveys e.g. birds, bats

Invertebrates e.g. kick sampling, pitfall traps, moth trapping, beating

Capture equipment e.g. nets, cages, traps, pooters

Marking equipment e.g. rings, tags, tattoos, dyes, radio tracking, microchips

Record-keeping methods.

Evaluating sampling and survey methods:

Benefits and limitations

Sources of error and how they can be minimised

Validity and reliability of data.

LO4 **Conduct ecological surveys based on sound ecological principles and in line with relevant legislation**

Species identification:

Use of identification keys e.g. online keys, dichotomous keys, specialist textbooks, random/multi-access keys, visual guides

Use of the binomial system

Identification of animal species e.g. mammals, birds, reptiles, amphibians, fish, invertebrates

Identification of habitats e.g. woodland, grassland, moorland, riparian

Identification of plant species e.g. evergreens, conifers, deciduous trees and shrubs, herbaceous, perennials, annuals, woodland plants, aquatic species, alpines, arid and ephemerals

Native, non-native and invasive species.

Data presentation:

Tables

Bar charts/histograms

Pie charts

Graphs

Scatter plots

Kite diagrams.

Data analysis and presentation:

Mean, median, mode

Range

Standard error

Standard deviation

Degrees of freedom and coefficient of variation

Normal distribution

Statistical tests e.g. t-tests, chi-square, Spearman's rank correlation coefficient

Conclusions

Evaluation of validity, reliability and sources of error.

Action planning:

The structure, content, purpose and uses of work programmes, site, habitat and project plans to assist with the day-to-day and technical management of the delegated countryside sites, areas or projects

How data is used internally (e.g. ecologists), externally, locally and nationally to assess current populations of flora and fauna, current and future habitat management and visitor management

Habitat action plans to include: introduction, current status, current factors affecting the habitat, current actions, short-, medium- and long-term objectives and targets, proposed action, budget, resources, funding, references, associated species, conservation, type of project e.g. small-scale, large-scale, community-based

Species action plans to include: introduction, current status, threats, conservation, current actions, short-, medium- and long-term objectives and targets, proposed action, budget, resources, funding, references, type of project e.g. small-scale, large-scale, community-based

Biodiversity action plans to include: current biodiversity assessment, conservation status, short-, medium- and long-term goals and targets, strategies, budget, resources, funding, monitoring, evaluation

The future of conservation e.g. use of AI and digital technologies, balancing nature protection with social justice, rewilding projects, reintroduction of endangered species.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Demonstrate land and habitat management techniques for a range of habitats and species to comply with relevant legislation		
P1 Create plans to carry out three land and habitat management activities for a specified purpose. **P2** Demonstrate three land and habitat management techniques safely, using appropriate equipment and techniques.	**M1** Justify plans in terms of legislative compliance, risk assessment, methods and equipment, overall purpose.	**D1** Evaluate plans and practical performance, giving well-reasoned suggestions for improvement.
LO2 Demonstrate management and construction of a range of infrastructure assets		
P3 Assess an example of an infrastructure asset in relation to the importance of safety and functionality. **P4** Plan the construction of an infrastructure asset that meets the needs of users. **P5** Demonstrate construction of an infrastructure asset safely, using appropriate equipment and techniques.	**M2** Create a long-term management plan based on the assessment of an infrastructure asset that considers cost and lifespan. **M3** Justify a construction plan in terms of legislative compliance, methods and equipment, cost and relationship with the landscape.	**D2** Evaluate personal strengths and areas for development, creating SMART targets to improve future performance.

Pass	Merit	Distinction
LO3 Plan ecological surveys for habitats and species to gather reliable and valid data		
P6 Plan a habitat survey to gather valid and reliable data that can be used to formulate a habitat action plan. **P7** Plan a wildlife population survey to gather valid and reliable data that can be used to formulate a species action plan.	**M4** Compare a range of survey and sampling techniques to determine the benefits and limitations of each.	**D3** Fully justify all aspects of habitat and species survey plans to ensure legislative compliance, validity and reliability of data.
LO4 Conduct ecological surveys based on sound ecological principles and in line with relevant legislation		
P8 Conduct a planned habitat survey safely, using appropriate equipment and techniques. **P9** Conduct a planned wildlife population survey safely, using appropriate equipment and techniques.	**M5** Analyse habitat and wildlife population survey data, using appropriate techniques to draw valid conclusions.	**D4** Formulate a habitat or species action plan, based on survey results, to provide recommended actions.

Recommended Resources

Textbooks

Ausden, M. (2007) *Habitat Management for Conservation: A Handbook of Techniques (Techniques in Ecology and Conservation)*. Oxford: Oxford University Press.

Beeby, A. and Brennan, A-M. (2008) *First Ecology: Ecological Principles and Environmental Issues*. 3rd Ed. Oxford: Oxford University Press.

Bowman, W.D. and Hacker, S.D. (2023) *Ecology*. 6th Ed. Cary NC: Sinauer Publishing.

Hambler, C. (2013) *Conservation*. 2nd Ed. Cambridge: Cambridge University Press.

Jeffries, M.J. (2006) *Biodiversity and Conservation*. 2nd Ed. London and New York: Routledge.

Lame, M. and Marcantonio, R. (2022). *Environmental Management: Concepts and Practical Skills*. Cambridge: Cambridge University Press.

Perrings, C. and Kinzig, A. (2021). *Conservation: Economics, Science and Policy*. Oxford: Oxford University Press.

Molles, M. (2015) *Ecology: Concepts and Applications*. 7th Ed. New York: McGraw-Hill Higher Education.

Sutherland, W.J. and Hill, D.A. (1995) *Managing Habitats for Conservation*.

Cambridge: Cambridge University Press.

Wich, S.A. and Koh, L.P. (2019). C*onservation Drones: Mapping and Monitoring Biodiversity*. Oxford: Oxford University Press.

Wich, S.A. and Piel, A K. (2021). *Conservation Technology*. Oxford: Oxford University Press.

Websites

link.springer.com/journal/10531	*Biodiversity and Conservation* (Journal)
www.britishecologicalsociety.org	British Ecological Society (General reference)
cieem.net	Chartered Institute of Ecology and Environmental Management (General reference)
www.ecos.org.uk	*ECOS: A Review of Conservation* (Journal)
www.gov.uk/government/organisations/natural-england	Natural England (General reference)
www.wildlifetrusts.org	The Wildlife Trusts (General reference)

Journals and articles

Aebischer, N. and Ewald, J. (2004) 'Managing the UK Grey Partridge *Perdix perdix* recovery: population change, reproduction, habitat and shooting', *IBIS*, 146(s2), pp. 181–191. Available at: https://doi.org/10.1111/j.1474-919X.2004.00345.x.

Bradfer-Lawrence, T. et al. (2023) 'Using acoustic indices in ecology: Guidance on study design, analyses and interpretation', *Methods in Ecology and Evolution*, 14(9), pp. 2192–2204. Available at: https://doi.org/10.1111/2041-210X.14194.

Cortés-Capano, G. et al. (2020) 'Exploring landowners' perceptions, motivations and needs for voluntary conservation in a cultural landscape', *People and Nature*, 2(3), pp. 840–855. Available at: https://doi.org/10.1002/pan3.10122.

Fuller, R.J et al. (2007) 'Habitat change and woodland birds in Britain: implications for management and future research', *IBIS*, 149(s2), pp. 261–268. Available at: https://doi.org/10.1111/j.1474-919X.2007.00775.x.

Fumy, F. and Fartmann, T. (2021) 'Climate and land-use change drive habitat loss in a mountain bird species', *IBIS*, 163(4), pp. 1189–1206. Available at: https://doi.org/10.1111/ibi.12954.

Hawkes, R. et al. (2020) 'Experimental evidence that novel land management interventions inspired by history enhance biodiversity', *Journal of Applied Ecology*, 58(5), pp. 905–908. Available at: https://doi.org/10.1111/1365-2664.13827.

Hurley, P. et al. (2022) 'Co-designing the environmental land management scheme in England: The why, who and how of engaging "harder to reach" stakeholders', *People and Nature*, 4(3), pp. 744–757. Available at: https://doi.org/10.1002/pan3.10313.

Priestley, V. et al. (2021) 'Quick detection of a rare species: Forensic swabs of survey tubes for hazel dormouse *Muscardinus avellanarius* urine', *Methods in Ecology and Evolution*, 12(5), pp. 818–827. Available at: https://doi.org/10.1111/2041-210X.13573.

Rissman, A. et al. (2023) 'Sustaining land and people over time: Relationships with successor landowners on conservation easements', *People and Nature*, 5(2), pp. 542–556. Available at: https://doi.org/10.1002/pan3.10436.

Sherriff, S. et al. (2019) 'Influence of land management on soil erosion, connectivity, and sediment delivery in agricultural catchments: Closing the sediment budget', *Land Degradation & Development*, 30(18), pp. 2257–2271. Available at: https://doi.org/10.1002/ldr.3413.

Williamson, M. et al. (2023) 'Implementation resistance and the human dimensions of connectivity planning', *People and Nature*, 5(6), pp. 1922–1936. Available at: https://doi.org/10.1002/pan3.10525.

Links

This unit links to the following related units:

Unit 5: Principles of Ecology and their Applications

Unit 6: British Wildlife

Unit 10: Wildlife Conservation

Unit 12: Habitat Restoration, Repair and Education.

Unit 8: Biological Principles

Unit code	**D/616/7849**
Unit type	**Core**
Unit level	**5**
Credit value	**15**

Introduction

The aim of this unit is to provide students with the underpinning knowledge of fundamental biological concepts that can be developed within *Unit 6: Animal Anatomy and Physiology*, *Unit 27: Biochemistry and Medical Microbiology* and *Unit 33: Animal Breeding and Genetics*. Biological principles relate to all areas of study within the animal management sector.

Students will study core concepts of cellular structure and function at organelle level, how cellular transport mechanisms allow the cell to function, and the subsequent organisation of cells into the specialised tissues and organ systems within the bodies of animal species. The importance of the maintenance of the internal environment will also be examined through the regulatory functions of homeostasis, feedback mechanisms, and endocrine and nervous system control.

Students will develop essential practical laboratory skills, including risk assessment and health and safety management within the laboratory, and analytical skills through the planning, development, execution and analysis of investigations into relevant biological principles and processes. Assessment strategies will include online quizzes, assessed practical investigations, written reports and presentations.

Having completed this unit, students will be equipped with the underpinning knowledge of the principles of biological processes as well as the necessary skills for carrying out practical investigations. These broad skills can be applied to their choices of specialism and career progression.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Analyse the structure and function of animal cells, organelles and cellular transport mechanisms

LO2 Assess the interrelationships between the organisation of cells, tissues and organ systems within the animal body

LO3 Determine how the internal environment of the animal body is maintained through the mechanisms of homeostasis

LO4 Demonstrate, through practical investigations, the principles and processes of biological concepts.

Essential Content

LO1 **Analyse the structure and function of animal cells, organelles and cellular transport mechanisms**

Cell structure and functions:

Prokaryotic cells (capsule, cell wall, plasma membrane, nucleoid, ribosomes, pili)

Eukaryotic cells (plasma membrane, cytoplasm, mitochondria, endoplasmic reticulum (smooth and rough), ribosomes, Golgi apparatus, peroxisomes, lysosomes, centrioles, nucleus), specialist structures (chloroplasts, vacuole, plasmodesmata, cilia, flagella)

Role of enzymes in cellular processes.

Cellular transport mechanisms:

Diffusion, osmosis, facilitated diffusion, active transport, filtration, phagocytosis, pinocytosis.

LO2 **Assess the interrelationships between the organisation of cells, tissues and organs systems within the animal body**

Tissue types:

Epithelial tissue (simple (squamous, cuboidal, columnar), stratified (squamous, columnar) pseudostratified)

Connective tissue (areolar, adipose, dense fibrous, cartilage, bone, blood)

Muscular tissue (smooth, skeletal, cardiac)

Nervous tissue (neurons, neuroglia, oligodendrocytes, microglia, astrocytes, ependymal cells, Schwann cells).

Organisation of tissues into organs and organ systems:

Nervous (central, peripheral, sympathetic, parasympathetic), endocrine, respiratory, circulatory (arteries, veins, capillaries), digestive, musculoskeletal, urinary, immune, integumentary.

LO3 **Determine how the internal environment of the animal body is maintained through the mechanisms of homeostasis**

Feedback systems:

Components and functions of feedback systems e.g. receptor, integrating centre, effector

Negative feedback systems e.g. CO_2, blood glucose, temperature, pH, water, sodium

Positive feedback systems, parturition

Effects when homeostasis is not maintained.

Role of the nervous and endocrine systems:

Nervous system e.g. autonomic nervous system, visceral sensory and motor neurons, rapid signalling

Endocrine system e.g. mechanism of action of hormones, transport into target cells, surface receptors, intracellular receptors, role of the second messenger systems (cyclic AMP, protein/tyrosine kinase, cyclic GMP, calcium), endpoint activity (alteration of enzyme and other dynamic molecule expression, cell physiology, modulation of gene expression).

LO4 **Demonstrate, through practical investigations, the principles and processes of biological concepts**

Trial, plan and implement **two** or more practical investigations, exploring **different** biological principles and processes **in each**.

Trial and plan

Scientific method, including background research, development of aims/hypotheses, and formulation of methods

Selection of appropriate techniques and apparatus after trialling

Identification and control of variables, use of controls and replicates as appropriate, consideration of sample size and repeatability

Risk assessment of reagents, equipment and procedures; safe and ethical practice.

Implementation and data collection

Accurate and safe execution of planned methods; recording of observations and measurements.

Use and, where relevant, calibration of measuring techniques (e.g. colorimetry, microscopy, balances, volumetric apparatus).

Organisation of raw data in structured formats.

Presentation and analysis of results

Presentation of data using appropriate tables and graphs (e.g. line, bar, scatter)

Application of appropriate calculations and basic statistical methods, as suitable to the investigation (e.g. means, ranges, percentage change, rate calculations; consideration of uncertainty)

Use of digital tools for recording, processing and graphing data, where appropriate.

Interpretation and evaluation

Drawing valid, quantitative conclusions supported by processed data

Identification of anomalies and potential sources of error/uncertainty; consideration of their impact on reliability and validity

Evaluation of methods and results with reference to published/known values; proposals for improvements and opportunities for further investigative work.

Illustrative practical contexts (e.g.)

Determination of the isotonic point of plant tissue by osmosis

Investigation of the effect of temperature on enzyme activity

Preparation of a glucose calibration curve using colorimetry

Exploration of surface area to volume ratio effects on diffusion.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Analyse the structure and function of animal cells, organelles and cellular transport mechanisms</td><td rowspan="5">LO1 and LO2

D1 Critically evaluate how the animal body integrates cells and tissues into organs to achieve efficiently functioning systems.</td></tr>
<tr><td>P1 Compare the structure and function of the cellular components of prokaryotic and eukaryotic cells.

P2 Examine how each method of cellular transport works in relation to cellular function.</td><td>M1 Critically analyse the function of the cellular components and transport mechanisms in maintaining the operation of prokaryotic and eukaryotic cells.</td></tr>
<tr><td colspan="2">LO2 Assess the interrelationships between the organisation of cells, tissues and organs systems within the animal body</td></tr>
<tr><td>P3 Review the roles of the various tissue types within the animal body.

P4 Discuss how the tissue types interrelate to form organs and organ systems.</td><td>M2 Appraise the efficacy of the integration of tissues into organ systems within the animal body.</td></tr>
<tr><td colspan="2">LO3 Determine how the internal environment of the animal body is maintained through the mechanisms of homeostasis</td></tr>
<tr><td>P5 Discuss how the components and processes of negative and positive feedback systems maintain homeostasis of major body systems.

P6 Compare the roles of the nervous and endocrine systems in homeostasis to including the mechanisms of action.</td><td>M3 Analyse the impact of homeostatic imbalance in body systems on the outcomes of endpoint outcomes.</td><td>D2 Provide critical evaluation of the efficacy of homeostatic mechanisms in maintaining the internal environment of the animal body.</td></tr>
</table>

Pass	Merit	Distinction
LO4 Demonstrate, through practical investigations, the principles and processes of biological concepts		
P7 Independently plan and conduct a series of practical activities to investigate a range of biological principles and processes. **P8** Analyse the results of these investigations and provide valid conclusions.	**M4** Justify the accuracy and validity of the outcomes of the investigations.	**D3** Critically evaluate the practical work undertaken to include recommendations for further investigative activities.

Recommended Resources

Textbooks

Jenkins, G., Kemnitz, C. and Tortora, G.J. (2009) *Anatomy and Physiology: v.1 & 2: From Science to Life*. London: John Wiley & Sons.

Reed, B., Weyes, J. and Jones, A. (2016) *Practical Skills in Biology*. 6th Ed. Harlow: Pearson.

Tortora, G.J. and Derrickson, B.H. (2012) *Essentials of Anatomy and Physiology*. London: John Wiley & Sons.

Web

www.msdvetmanual.com	MSD Manual (Merck) Veterinary Content/Resources (Research/General reference)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 6: British Wildlife.

Unit 9: Research Project (Pearson-set)

Unit code	**R/616/7850**
Unit level	**5**
Credit value	**30**

Introduction

This unit is assessed by a Pearson-set assignment. Students will choose their own project based on a theme provided by Pearson (this will change annually). The project must be related to students' specialist pathway of study (unless the student is studying a general pathway). This will enable students to explore and examine a relevant and current topical aspect of business in the context of the land-based environment and their chosen specialist pathway.

The aim of this unit is to offer students the opportunity to engage in sustained research in a specific field of study. The unit enables students to demonstrate the capacity and ability to identify a research theme, to develop research aims, objectives and outcomes, and to present the outcomes of such research in both written and verbal formats. The unit also encourages students to reflect on their engagement in the research process, as recommendations for future, personal development are key learning points.

On successful completion of this unit, students will have the confidence to engage in problem-solving and research activities which are part of the function of a manager. Students will have the fundamental knowledge and skills to enable them to investigate workplace issues and problems, determine appropriate solutions and present evidence to various stakeholders in an acceptable and understandable format.

Please refer to the accompanying Pearson-set Assignment Guide and the Theme Release document for further support and guidance on the delivery of the Pearson-set unit.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Examine appropriate research methodologies and approaches as part of the research process

LO2 Conduct and analyse research relevant for a land-based business research project

LO3 Communicate the outcomes of a research project to identified stakeholders

LO4 Reflect on the application of research methodologies and concepts.

Essential Content

LO1 Examine appropriate research methodologies and approaches as part of the research process

Developing a research proposition:

The importance of developing methodical and valid propositions as the foundation for a research project

Rationale – the purpose and significance for research question or hypothesis

The value of the philosophical position of the researcher and the chosen methods

Use of Saunders' research onion as a guide to establishing a methodological approach.

Literature review:

Conceptualisation of the research problem or hypothesis

The importance of positioning a research project in the context of existing knowledge

Significance and means of providing benchmarks by which data can be judged.

Qualitative, quantitative and mixed method research:

Key theoretical frameworks for research

Advantages and limitations of qualitative and quantitative research approaches and methods.

LO2 Conduct and analyse research relevant for a land-based business research project

Research as a process:

Research has distinct phases which support a coherent and logical argument, which includes using secondary research to inform a primary, empirical, study.

Selecting a sample:

The importance of gathering data and information (qualitative or quantitative) to support research analysis

Selecting sample types and sizes that are relevant to the research

Considering sampling approaches and techniques e.g. probability and non-probability sampling.

Ethics, reliability and validity:

Research should be conducted ethically – how is this achieved and reported?

Research should also be reliable (similar results would be achieved from a similar sample) and valid (the research measures what it aimed to measure).

Analysing data:

Using data collection tools e.g. interviews and questionnaires

Using analytical techniques e.g. trend analysis, coding or typologies.

LO3 **Communicate the outcomes of a research project to identified stakeholders**

Stakeholders:

Who are they?

Why would they be interested in the research outcomes?

What communication method do they expect?

Communicating research outcomes:

Consideration of different methods of communicating outcomes (e.g. written word, spoken word) and the medium (e.g. report, online, presentation)

The method and medium will be influenced by the research and its intended audience.

Convincing arguments:

No matter what the method/medium, all research should be convincing and presented logically where the assumption is that the audience has little or no knowledge of the research process

The importance of developing evaluative conclusions.

LO4 **Reflect on the application of research methodologies and concepts**

Reflection for learning and practice:

Difference between reflecting on performance and evaluating a research project – the former considers the research process, the latter considers the quality of the research argument and use of evidence

Reflection on the merits, limitations and potential pitfalls of the chosen methods.

The cycle of reflection:

Reflection in action and reflection on action

Considering how to use reflection to inform future behaviour and future considerations.

Reflective writing:

Avoiding generalisation; focusing on personal development and the research journey in a critical and objective way.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Examine appropriate research methodologies and approaches as part of the research process</td><td rowspan="5">LO1 and LO2

D1 Critically evaluate research methodologies and processes in application to a business research project to justify chosen research methods and analysis.</td></tr>
<tr><td>P1 Produce a research proposal that clearly defines a research question or hypothesis supported by a literature review.

P2 Examine appropriate research methods and approaches to primary and secondary research.</td><td>M1 Evaluate different research approaches and methodology and make justifications for the choice of methods selected, based on philosophical/theoretical frameworks.</td></tr>
<tr><td colspan="2">LO2 Conduct and analyse research relevant for a land-based business research project</td></tr>
<tr><td>P3 Conduct primary and secondary research using appropriate methods for a business research project that consider costs, access and ethical issues.

P4 Apply appropriate analytical tools, analyse research findings and data.</td><td>M2 Discuss merits, limitations and pitfalls of approaches to data collection and analysis.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Communicate the outcomes of a research project to identified stakeholders		
P5 Communicate research outcomes in an appropriate manner for the intended audience.	**M3** Coherently and logically communicate outcomes to the intended audience, demonstrating how outcomes meet set research objectives.	**D2** Communicate critical analysis of the outcomes and make valid, justified recommendations.
LO4 Reflect on the application of research methodologies and concepts		
P6 Reflect on the effectiveness of research methods applied for meeting objectives of the business research project. **P7** Consider alternative research methodologies and lessons learnt in view of the outcomes.	**M4** Provide critical reflection and insight that results in recommended actions for improvements and future research considerations.	**D3** Demonstrate reflection and engagement in the research process, leading to recommended actions for future improvement.

Recommended Resources

Textbooks

Costley, C., Elliot, G. and Gibbs, P. (2010) *Doing Work Based Research: Approaches to Enquiry for Insider-researchers.* London: SAGE.

Flick, U. (2011) *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project*. London: SAGE.

Gray, D. (2009) *Doing Research in the Real World.* 2nd Ed. London: SAGE.

Saunders, M., Lewis, P. and Thornhill, A. (2012) *Research Methods for Business Students.* 6th Ed. Harlow: Pearson.

Links

This unit links to the following related units:

Unit 3: Managing a Successful Project (Pearson-set).

Unit 10: Wildlife Conservation

Unit code	**F/616/7861**
Unit level	**5**
Credit value	**15**

Introduction

The natural world faces ever-increasing pressures from human activities. As ecosystems reduce in size and productivity, this has an impact on the wildlife populations that inhabit them. In recent decades, conservation action has increased in significance and effectiveness to a point where human activity can now greatly benefit the sustainability of wildlife populations. In the land-based sector, there are many activities that have an impact on natural spaces and, as such, the workforce must be knowledgeable and skilled in understanding and interacting with wildlife and their habitats.

In this unit, students will study the theories and principles for analysing wild animal species and explore how to apply this knowledge in the field. They will examine the threats to wild animal populations and explore the solutions to conservation problems that face the modern world. Through studying wildlife conservation, students will gain insights into the variety of approaches to promoting wildlife, from working with key species directly, to managing natural spaces and habitats, and engaging in political and economic issues.

This unit will also allow students to develop knowledge of the natural world and evaluate the human impact on wildlife species. They will again insight into the practical realities of working in the conservation field and examine existing and theoretical conservation projects and activities.

With the experience gained through studying this unit, students will be well equipped to engage in solving wildlife conservation problems, underpinned by knowledge of the relevant theories and principles. Students will find their knowledge and skills useful if looking to progress into a wide range of roles in the land-based sector, from the management of natural spaces and gamekeeping, to responsible agriculture, as well as working in the wildlife conservation field specifically.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Evaluate human influences on wildlife species and their natural habitats

LO2 Discuss species-centred approaches to wildlife conservation

LO3 Discuss habitat management strategies to promote wildlife conservation

LO4 Explore economic, social and political approaches to wildlife conservation.

Essential Content

LO1 **Evaluate human influences on wildlife species and their natural habitats**

Population disruption:

Overharvesting

Exploitation.

Habitat disruption:

Destruction

Fragmentation.

Ecological disruption:

Disruption of food chains

Fragmentation of populations

Alien/invasive species introduction.

Environmental impacts:

Pollution

Climate change.

Impact of human development:

Industry

Agriculture

Urbanisation.

LO2 **Discuss species-centred approaches to wildlife conservation**

Species ecology:

Life history

Behavioural ecology

Population dynamics.

Wildlife rehabilitation:

Capture and transportation

Captive care and management

Translocation of animals

Release and post-release monitoring.

Breeding programmes:

Gene pool management

Gene flow

Genetic drift

Inbreeding

Captive breeding management

Collaborative systems

Hybridisation

Cross-fostering

Hand-rearing.

Assessing animal populations:

Wildlife census

Tracking and monitoring techniques and equipment

Population viability analysis

Data interpretation and analysis.

LO3 **Discuss habitat management strategies to promote wildlife conservation**

Habitat ecology:

Abiotic factors

Biome definitions and issues.

Habitat rehabilitation and management:

Recovering vegetation

Fire management

Corridors

Erosion control

Protected areas

National and transnational parks

Invasive species control.

Common practices:

Action planning

Legislative considerations

Codes of practice

Equipment and materials

Considering sensitive environments.

Ecological surveying:

Techniques for investigating habitats

Using ecological survey data.

LO4 **Explore economic, social and political approaches to wildlife conservation**

Wildlife economics:

Animal trade

Wildlife product trade

Market regulation and black markets

Ecotourism

Economic impact of productive ecosystems.

Conservation legislation:

National, international and transnational legislation

Wildlife crime investigation and enforcement

Codes of practice.

Socio-cultural considerations:

Human perspectives on wildlife

Community demands

Community education

Campaigning and marketing

Fundraising.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Evaluate human influences on wildlife species and their natural habitats</td><td rowspan="2"></td></tr>
<tr><td>P1 Investigate the impact of human activity on wildlife population numbers.
P2 Assess the impact of human activity on the natural environment.</td><td>M1 Evaluate the ecological significance of human industry and agriculture on wildlife.</td></tr>
<tr><td colspan="2">LO2 Discuss species-centred approaches to wildlife conservation</td><td rowspan="5">LO2 and LO3

D2 Critically evaluate the conservation actions taken to promote a wildlife population and justify suggested alternatives/ improvements.</td></tr>
<tr><td>P3 Assess strategies for managing wild animal populations in captivity for conservation purposes.
P4 Explain the practices and considerations for managing a wild animal population.</td><td>M2 Evaluate the success of intervention in a wildlife species' population.</td></tr>
<tr><td colspan="2">LO3 Discuss habitat management strategies to promote wildlife conservation</td></tr>
<tr><td>P5 Discuss the ecological components of wildlife habitats.
P6 Compare strategies for influencing environmental factors.</td><td>M3 Analyse the ecological implications of human alteration of environmental factors.</td></tr>
<tr><td colspan="2">LO4 Explore economic, social and political approaches to wildlife conservation</td><td rowspan="2">D3 Critically analyse the economic, cultural and political context for a conservation project.</td></tr>
<tr><td>P7 Analyse the economic significance of wildlife and their habitats.
P8 Evaluate political and social actions undertaken in the promotion of conservation.</td><td>M4 Compare the needs of different stakeholders in a conservation project.</td></tr>
</table>

Recommended Resources

Textbooks

Begon, M. (2006) *Ecology: from Individuals to Ecosystems*. 4th Ed. New Jersey: John Wiley & Sons.

Bell, J.R., Cook, P.A. and Wheater, C.P. (2011) *Practical Field Ecology: A Project Guide.* New Jersey: Wiley.

Caughley, G., Fryxell, J.M. and Sinclair, A.R.E. (2014) *Wildlife Ecology, Conservation, and Management.* 3rd Ed. London: Wiley-Blackwell.

Conroy, M.J. and Peterson, J.T. (2013) *Decision Making in Natural Resource Management: A Structured, Adaptive Approach.* London: Wiley-Blackwell.

Ennos, R. (2012) *Statistical and Data Handling Skills in Biology.* 3rd Ed. London: Prentice Hall.

Knight, J. (2013) *Natural Enemies: People-wildlife Conflicts in Anthropological Perspective.* London: Routledge.

Web

www.cites.org	Convention on the International Trade in Endangered Species (General reference)
www.iucn.org	The International Union for the Conservation of Nature (General reference)
theiwrc.org	The International Wildlife Rehabilitation Council (General reference)
www.wwf.org.uk	World Wide Fund for Nature (General reference)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 4: Managing Environmental Resources

Unit 5: Principles of Ecology and their Applications

Unit 6: British Wildlife

Unit 7: Practical Conservation and Land Management

Unit 11: Work Experience in the Conservation and Countryside Sector

Unit 12: Habitat Restoration, Repair and Education.

Unit 11: Work Experience in the Conservation and Countryside Sector

Unit code: K/651/3881

Unit level: 5

Credit value: 30

Introduction

Conservation and countryside management is a fast-growing and increasingly important sector with a wide variety of roles. Competition is high, and many employers rank work experience as the most important part of a qualification when selecting suitable candidates. This unit will ensure that students develop the range of professional skills, abilities and competencies required by employers in this fiercely competitive sector.

Students will be able to explore the range of roles and opportunities within this sector before developing their own career goals and objectives. Through evaluation of the importance of producing job-specific CVs and supporting letters, along with planning and preparation for a range of interview styles, students will secure work experience that is relevant to their chosen career path. Students will have the opportunity to evaluate their own skills and plan their professional development to meet their career goals.

This unit will ensure students can put theory into practice and gain hands-on experience in their chosen sector. They will be able to perform skills effectively and apply them to real-world situations with confidence. The experience gained while on work placement will be instrumental in future job success and will enhance CVs to ensure students stand out from the crowd.

Students will document the tasks and activities undertaken and regularly evaluate their performance, seeking feedback and setting targets to ensure ongoing skills development.

A minimum 160 work experience hours are required for completion of the unit. Work experience may commence in year 1 and be completed by the end of year 2.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Explore career and progression opportunities in the conservation and countryside sector to meet personal priorities and objectives

LO2 Plan relevant work experience in the conservation and countryside sector to develop work-based skills and competencies

LO3 Undertake work experience in the conservation and countryside sector to contribute to personal and professional development

LO4 Evaluate personal strengths and areas for development to create SMART targets in line with organisational objectives.

Essential Content

LO1 Explore career and progression opportunities in the conservation and countryside sector to meet personal priorities and objectives

Careers within the conservation and countryside sector:

Broad range of current industries and roles e.g. conservation, countryside ranger/officer, gamekeeping, wildlife management, woodland management, forestry, arboriculture, ecologist, nature officer, community engagement, environmental education

Job descriptions, roles, responsibilities and competencies

Person descriptions, essential and desirable criteria

Contract types e.g. permanent, fixed-term, maternity cover

Employment sectors e.g. public, private, charities, voluntary, self-employed.

Work-based legislation:

Understanding and application of relevant workplace legislation e.g. the General Data Protection Regulation; safeguarding children, young people and vulnerable adults; waste management; risk management and assessment; record-keeping and compliance.

Work-based skills and behaviours relevant to specific job roles:

Personal e.g. self-discipline, self-motivation, proactive, personal responsibility, ability to respond to feedback, open to change, polite, professional, team working and collaboration, self-awareness, inclusivity

Definition of hard skills and a range of examples e.g. identification, mapping, surveying, driving, machine operation

Definition of soft skills and a range of examples e.g. time management, communication, leadership, organisation, self-motivation

Definition of transferable skills and relevant examples e.g. collaboration, problem solving, prioritising, adaptability, decision-making

Job-specific competencies and occupational standards

Self-reflection, analysis of own skills and abilities, setting of SMART (specific, measurable, achievable, realistic, timely) targets and goals.

Progression opportunities and requirements:

Progression requirements e.g. qualifications, skills, knowledge, experience

Progression pathways e.g. volunteer, trainee, team worker, supervisory, managerial

Analysis of the advantages and disadvantages of different progression pathways.

Review of the purpose and benefits of carrying out work experience:

Role of work experience in preparation for selected career

Benefits of practical learning

Application of theory to practice

Importance of soft skills in the conservation and countryside sector

Evaluation of the value and benefits of practical work experience in the conservation and countryside sector.

LO2 **Plan relevant work experience in the conservation and countryside sector to develop work-based skills and competencies**

Applying for work-related experience:

Sources of vacancies/opportunities e.g. websites, trade publications, sector-wide bodies, agencies

Selection of a suitable work experience position for development of skills to meet future employment goals

Completion of a curriculum vitae (CV) appropriate to a specific role

Accurate presentation of experience on business social media platforms e.g. LinkedIn

Evaluation of the importance of applying job descriptions, person specifications, essential and desirable criteria when completing cover letters, CVs and application forms.

Learning and development approaches:

Visual, auditory and kinaesthetic (VAK) learning styles, Honey and Mumford's learning cycle, Kolb's learning cycle

Different learning approaches e.g. shadowing, in-house courses and on-the-job training, online learning, formal training, buddying, secondment, coaching and mentoring, job rotation, workshops, conferences.

Targets, aims and objectives:

Self-assessment of skills and competencies

SMART planning, writing of goals and objectives.

Interview and presentation skills:

Interview styles e.g. knowledge-based, competency-based, behaviour-based

Planning and preparation for different interview styles

The importance of personal appearance, body language and non-verbal communication

Interpersonal and communication skills e.g. use of language, building rapport, effective listening and questioning.

LO3 **Undertake work experience in the conservation and countryside sector to contribute to personal and professional development**

Carrying out planned tasks:

Effective engagement in tasks e.g. work programmes, site/habitat project plans, routine duties and responsibilities, day-to-day and technical management of programmes/plans/projects/areas

Adhering to legislation/codes of practice relevant to the workplace e.g. environmental legislation; land and wildlife designations; permissions and licences relevant to the management of habitats and species; other countryside management works; planning regulation and legal processes and procedures in relation to managing public rights of way and other public access

Adhering to, and promoting, health and safety policies and procedures

Use of allocated resources to planned budget; time constraints; method and quality

Complying with, and ensuring others comply with, legislation, industry regulations and standards, organisational policies and procedures, professional codes and ethics relevant to job role

Meeting organisational objectives

Application of workplace codes of practice, policies and procedures

Customer service principles, including identifying and addressing the types and needs of different customers and their expectations, and managing conflict.

People management and leadership:

Methods of team/volunteer management, work allocation and delegation e.g. supervising, motivating, managing, coordination of tasks

Methods for, and the importance of, maintaining good team/customer relations

How to build effective and collaborative relationships

Methods of communication with different groups of people to promote the work of the organisation in a positive light e.g. colleagues, team members, volunteers, contractors, customers, local community groups, interest groups, educational and corporate groups, landowners, tenants, stakeholders, the public

How to recruit, train, supervise, motivate and manage volunteers and staff to maintain good team relations and provide a positive volunteer experience

Ways of promoting well-being within the workplace

Lines of responsibility and how to escalate issues appropriately

The link between a team's work and organisational objectives

The importance of, and organisational approaches to, performance management and supervisory practices to improve performance.

Demonstrate professional skills and behaviours:

Workload management, flexibility, ability to prioritise, proactive attitude to work

Consideration of other perspectives/options

Problem solving, solution-focused decision-making

Communication with, and seeking advice from, relevant authorities e.g. Historic England (for scheduled monuments), ecologists

Dealing with emergencies and incidents as appropriate within the limits of responsibility, authority and level of training

Acting in accordance with organisational policies, procedures, values and behaviours

Acting as an ambassador for the organisation

Promoting respect for the work of the organisation from customers, stakeholders and staff/team members

Make decisions based on the organisation's principles and relevant and accurate information

Take personal responsibility for developing own knowledge and skills to improve performance and meet personal/organisational goals

Awareness of own knowledge and limits of responsibility, seeking relevant advice and support when appropriate.

Recording evidence of workplace activities:

Appropriate methods for recording evidence e.g. logbooks, portfolios, journals, diaries

Linking experiences gained during work experience to relevant skills, competencies and behaviours.

LO4 **Evaluate personal strengths and areas for development to create SMART targets in line with organisational objectives**

Evaluation of personal strengths:

Application of Gibbs' reflective cycle

Continuing professional development (CPD) targets and inner development goals

Recognition of strengths and areas for development

Creation of SMART (specific, measurable, achievable, realistic, timely) objectives in line with organisational objectives

Self-evaluation against professional competencies/standards

Participation in development opportunities

Seeking and acting on feedback in a positive way.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Explore career and progression opportunities in the conservation and countryside sector to meet personal priorities and objectives</td><td rowspan="6">LO1 and LO2

D1 Critically evaluate own preparation for, and performance in, a work experience interview, suggesting well-reasoned improvements for the future.</td></tr>
<tr><td>P1 Explore a range of relevant work experience options to determine suitable opportunities that meet personal priorities and objectives.

P2 Review the value and benefits of practical work experience in the development of professional skills and competencies.</td><td>M1 Assess own skills and behaviours in relation to specific job descriptions, including reference to the person specification, and essential and desirable criteria.</td></tr>
<tr><td colspan="2">LO2 Plan relevant work experience in the conservation and countryside sector to develop work-based skills and competencies</td></tr>
<tr><td>P3 Create a CV and supporting letter to apply for a specific work experience opportunity in the conservation and countryside sector.

P4 Analyse the different interview styles in relation to the importance of planning and preparation.

P5 Plan relevant work experience in the conservation and countryside sector.</td><td>M2 Demonstrate effective communication and interpersonal skills as an interviewee for a selected work experience role.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Undertake work experience in the conservation and countryside sector to contribute to personal and professional development		**LO3 and LO4** **D2** Critically evaluate own skills and performance against professional competencies to develop personal objectives and improve ongoing performance and development.
P6 Conduct appropriate work experience to develop specific skills for career development while producing ongoing evidence of work performance.	**M3** Critically analyse methods of communication used with different groups of people in relation to promoting organisational objectives.	
LO4 Evaluate personal strengths and areas for development to create SMART targets in line with organisational objectives		
P7 Evaluate work experience using Gibbs' reflective cycle to improve future performance.	**M4** Formulate a personal action plan that includes SMART objectives in line with organisation objectives.	

Recommended Resources

Textbooks

Costley, C., Elliott, G. and Gibbs, P. (2010) *Doing Work Based Research: Approaches to Enquiry for Insider-Researchers*. London: SAGE Publications.

Done, J. and Mulvey, R. (2016) *Brilliant Graduate Career Handbook*. 3rd Ed. Harlow: Pearson Education.

Kirton, B. (2012) *Brilliant Workplace Skills for Students and Graduates*. Harlow: Pearson Education.

Rook, S. (2016) *Work Experience, Placements and Internships*. London: Palgrave.

Websites

www.cipd.co.uk	Chartered Institute of Personnel and Development (General reference)
www.mindtools.com	Mind Tools 'Career Skills' (Resources)
nationalcareers.service.gov.uk	National Careers Service (Resources)

Links

This unit links to all others in the specification.

Unit 12: Habitat Restoration, Repair and Education

Unit code: L/651/3882

Unit level: 5

Credit value: 30

Introduction

The majority of wildlife decline in the UK over the last century has been caused by changes in land use and management practices. Human activities such as urbanisation, increased infrastructure, pollution and agriculture have been the main drivers behind habitat loss. Habitat destruction, degradation and fragmentation decrease biodiversity and have direct impacts on humans, such as reduced carbon sequestration. Governments have set ambitious targets to create, restore and repair habitats, such as the protection of 30% of UK land and sea for nature by 2030 and restoring 75% of protected sites to favourable conditions by 2042. The use of sustainable development and implementation of sustainable development goals can also support habitat restoration.

In this unit, students will evaluate the consequences of changes in land use and management in relation to species and habitats. They will examine the targets set by governments for nature recovery, and assess the challenges and barriers to delivery. Students will examine case studies of current habitat restoration projects, critically evaluating their value and success.

A key factor in the success of conservation and habitat restoration projects is the cooperation of different groups of people, from landowners and farmers to individuals and the general public.

Students will explore the key principles of environmental interpretation as an educational tool and analyse its benefits in promoting environmental projects in a positive light. They will have the opportunity to design, produce and deliver a piece of environmental interpretation, and gain feedback to evaluate its effectiveness.

Learning Outcomes

By the end of this unit a student will be able to:

LO1 Examine the importance of habitat restoration and repair in relation to habitats and ecosystems

LO2 Evaluate the key considerations and challenges when planning a habitat restoration project to meet government targets for nature recovery

LO3 Explore the key principles of environmental interpretation to determine its benefits to the conservation and countryside sector

LO4 Evaluate the effectiveness of environmental interpretation as a tool for environmental education.

Essential Content

LO1 Examine the importance of habitat restoration and repair in relation to habitats and ecosystems

Legislative considerations relevant to habitat restoration and repair in the UK:

Key environmental legislation and targets e.g. Environment Act 2021: targets for nature recovery; Environmental Improvement Plan 2023: outcomes and goals; habitat restoration target (England); Nature Recovery Network (England); local nature recovery strategies (LNRS)

Barriers/challenges to delivering goals e.g. funding of management and monitoring, land ownership and access issues, capacity/skills gap

Land and wildlife designations

Permissions and licences relevant to the management of habitats, species and other countryside management works e.g. Conservation of Habitats and Species Regulations 2017, National Parks and Access to the Countryside Act 1949, Natural Environment and Rural Communities Act 2006

How to contact, communicate with and seek advice from relevant authorities.

UK habitats and ecosystems:

Key features of main UK ecosystems and habitats: development, distribution, abiotic and biotic factors, flora and fauna, current threats and status

Indicator species and their uses in relation to habitat assessment

Identification of native and invasive species

Requirements of a complex range of native and invasive species, and the relationship between them and the environment

Evaluation of the history, development and current uses of land in the UK (e.g. agriculture, forestry, housing, recreation) and their interactions

Evaluation of the impact of changes in land use on species and habitat abundance and distribution.

Principles of habitat restoration:

Definition, reasons and rationale, value and benefits to people and nature

Goals and objectives e.g. creating, restoring or improving habitats or ecosystem functions

Sustainable development and setting sustainable development goals

Ecological succession: role and processes

Large-scale projects e.g. Wild Ken Hill (England), Wallasea Wild Coast (England), Wild Ennerdale (England), Holnicote Estate (England), Cairngorms Connect (Scotland), Pumlumon (Wales)

Small-scale projects and community-based projects e.g. tree planting, revegetation of riverbanks, removal of invasive flora, restoring native hedgerows, creating green spaces in public areas (e.g. schools and parks), mowing grass less frequently

Critical evaluation of named habitat restoration projects.

LO2 **Evaluate the key considerations and challenges when planning a habitat restoration project to meet government targets for nature recovery**

Key concepts underpinning habitat restoration and repair:

Landscape ecology, blue space/blue infrastructure, disturbance, genetics, succession, community assembly theory.

Carrying out habitat restoration and repair:

Assessment of current habitat condition, type and level of degradation

Identifying and allocating resources

Organising and prioritising habitat restoration and repair activities

Drivers of habitat degradation and assessment of whether they can be stopped, reversed or reduced e.g. development and urbanisation, intensive agriculture, climate change, invasive species, pollution

Identification and assessment of key habitat components and ecological processes e.g. biotic and abiotic factors

Evaluation of appropriate species for habitat restoration e.g. interspecific and intraspecific relationships, population interactions, perceptions of differing groups (public, landowners, farmers)

Analysis of habitat restoration techniques, their benefits and limitations, ethical considerations e.g. revegetation, rewilding, changes in agricultural practices, river diversions, surface waterbodies and watercourses, removal of invasive species, habitat enhancement, rehabilitating substrates, restoration of natural flood or fire regimes, improving genetic diversity, remediation, mitigation

Methods of monitoring and management e.g. identification of biodiversity increases, similarity of site to reference habitats, use of indicators, measurement of abiotic factors, assessment against baseline targets/goals

Reviewing and evaluating work carried out

Setting and achievement of sustainable development goals

Monitoring technology e.g. apps, artificial intelligence (AI), remote sensing, environmental DNA (eDNA), acoustic monitoring

Management of minor and major incidents and emergencies using safe working practices, including the responses/actions needed and their impact on the environment e.g. landslips, flooding, snow and ice, fires, pollution

Limits of responsibility, organisational and legislative processes and the response/actions needed and how they have an impact on the environment, natural habitats, assets and people.

Challenges to habitat restoration and repair projects:

Varying timescales involved for project success e.g. years to centuries

Challenges and limitations associated with restoration of different habitats e.g. complex habitats, soil communities

Financial challenges

Current and future funding sources e.g. Environmental Land Management schemes (ELMs) e.g. Sustainable Farming Incentive (SFI), Local Nature Recovery (LNR), Landscape Recovery (LR); Payments for Ecosystem Services (PES), biodiversity net gain (BNG), grants, charitable donations, updates to tax and land registrations, establishment of environmental accreditation schemes

Capacity and skills

Access to, and competition for, other land uses e.g. infrastructure, food, renewable energy, timber production.

LO3 **Explore the key principles of environmental interpretation to determine its benefits to the conservation and countryside sector**

Principles of environmental interpretation:

Definitions and reasons for environmental interpretation

Objectives of environmental interpretation: learning, behavioural, emotional, management

The difference between environmental interpretationand environmental instruction

Evaluation of the advantages and disadvantages of environmental interpretation and environmental instruction

Types of audience and setting relevant to the countryside and conservation sector

Principles of environmental interpretation: Tilden's six principles of interpretation, Beck and Cable's 15 guiding principles for interpreting nature and culture

Analysis of the benefits of environmental interpretation

Interpretive techniques: audience engagement, thematic approach, significance for the visitor, provocation, use of humour, graphic representation, adapting communication style and medium to suit an audience

Ideal targets for environmental interpretation, Maslow's hierarchy of needs as a model for understanding the motivations for human behaviour, theory of planned behaviour.

Forms of environmental interpretation:

The definition of, approach to and examples of static environmental interpretation

The definition of, approach to and examples of educational planning programmes

Broad range of forms of environmental interpretation e.g. guided vs self-guided walks/trails, talks, excursions, mass media (educational events, social media, Forest School), exhibitions, pamphlets/signs, guidebooks, interpretive panels (audio, audiovisual, multimedia), touch tables, educational programmes (school workshops, community workshops)

Comparison and evaluation of examples of static interpretation vs educational programmes

Analysis of forms of interpretation e.g. advantages, disadvantages, cost, construction materials, longevity, risk assessment, health and safety, accessibility, suitability, maintenance requirements, setting/location, interpretive potential.

LO4 **Evaluate the effectiveness of environmental interpretation as a tool for environmental education**

Planning for environmental interpretation:

Objectives/goals

Relevance to setting/location

Site security and susceptibility to vandalism

Target audience/visitor type e.g. the public, stakeholders, landowners

Projected visitor numbers and demographic profiles

How to meet the needs of different audience/visitor types

Accessibility

Planning for personalised/guided vs non-personalised/self-guided interpretation.

Design considerations:

Selection of interpretive media

Construction materials

Time constraints

Cost, budget

Design considerations for printed resources e.g. presentation, font style and size, colouration and contrast, illustrations, photographs, imagery, balance, layout, interactive features

Evaluation of the advantages and disadvantages of different construction materials

Design considerations for talks or tours e.g. presentation style, presentation skills, communications skills, communication with a variety of audiences, use of equipment such as IT and projectors

Strategies for persuasive communication

Management requirements e.g, maintenance, risk assessment, health and safety, staffing requirements, longevity.

Evaluating the effectiveness of an environmental interpretation:

The importance of gaining feedback, responding positively to feedback, being open to change

Front-end, formative and summative evaluation

Evaluation techniques e.g. self-evaluation, qualitative vs quantitative methods, questionnaires, questioning (direct, indirect, open, closed), observation, mapping, scoring, interviews, surveys, tracking participation rates

Reasons for evaluation: to check that goals/objectives have been met, to ensure the key principles of environmental interpretation have been adhered to, to check that key factors have been met e.g. physical and conceptual accessibility or health and safety.

Learning Outcomes and Assessment Criteria

<table>
<tr><th>Pass</th><th>Merit</th><th>Distinction</th></tr>
<tr><td colspan="2">LO1 Examine the importance of habitat restoration and repair in relation to habitats and ecosystems</td><td rowspan="6">LO1 and LO2

D1 Critically evaluate the techniques used, challenges to overcome and success of a named habitat restoration project in relation to meeting goals set out by governments.</td></tr>
<tr><td>P1 Evaluate the impact of changes in land use on the abundance and distribution of species and habitats.

P2 Examine the goals set out by governments to promote nature recovery and the use of sustainable development goals.

P3 Examine the importance of habitat restoration and repair in relation to habitats and ecosystems.</td><td>M1 Justify the need for habitat restoration and repair activities.</td></tr>
<tr><td colspan="2">LO2 Evaluate the key considerations and challenges when planning a habitat restoration project to meet government targets for nature recovery</td></tr>
<tr><td>P4 Evaluate the key considerations of a range of habitat restoration techniques to determine their benefits and challenges.

P5 Evaluate a named species' suitability for a habitat restoration project to improve overall habitat quality.</td><td>M2 Appraise the current challenges for habitat restoration projects and make recommendations to overcome these challenges to meet government targets for nature recovery.</td></tr>
</table>

Pass	Merit	Distinction
LO3 Explore the key principles of environmental interpretation to determine its benefits to the conservation and countryside sector		**LO3 and LO4** **D2** Critically evaluate the design and delivery of environmental interpretation using a range of evaluation techniques.
P6 Explore the key principles of environmental interpretation as a method for engaging audiences in an environmental setting. **P7** Analyse the benefits of environmental interpretation as a method of promoting the work of an organisation.	**M3** Critically analyse a range of forms of environmental interpretation in terms of meeting the needs of different audiences.	
LO4 Evaluate the effectiveness of environmental interpretation as a tool for environmental education		
P8 Plan a piece of environmental interpretation to meet the needs of a target audience based on the key principles of interpretation. **P9** Produce a piece of environmental interpretation using appropriate construction materials/methods. **P10** Deliver environmental interpretation to a target audience to gain feedback to evaluate its effectiveness.	**M4** Justify all aspects of planned environmental interpretation in relation to the range of design considerations and key principles of environmental interpretation.	

Recommended Resources

Textbooks

Allison, S. and Murphy, S. (2019) *Routledge Handbook of Ecological and Environmental Restoration*. Abingdon: Routledge.

Ausden, M. (2007) *Habitat Management for Conservation: A Handbook of Techniques*. Oxford: Oxford University Press.

Clewell, K. and Aronson, J. (2013) *Ecological Restoration: Principles, Values, and Structure of an Emerging Profession*. 2nd Ed. Washington DC: Island Press.

de Vries, B.J.M. (2023) *Sustainability Science*. 2nd Ed. Cambridge: Cambridge University Press.

Falk, D., Palmer, M. and Zedler, J. (2016) *Foundations of Restoration Ecology*. Washington DC: Island Press.

Helm, D. (2015) *The Carbon Crunch: Revised and Updated*. 2nd Ed. New Haven, CT: Yale University Press.

Perrow, M. and Davy, A. (2002) *Handbook of Ecological Restoration Volume 1: Principles of Restoration*. Cambridge: Cambridge University Press.

Perrow, M. and Davy, A. (2008) *Handbook of Ecological Restoration Volume 2: Restoration in Practice*. Cambridge: Cambridge University Press.

Rieger, J., Stanley, J. and Traynor, R. (2014) *Project Planning and Management for Ecological Restoration*. Washington DC: Island Press.

Rush, V. (2014) *Planned Behavior: Theory, Applications and Perspectives*. New York: Nova Science Publishers.

Sher, A. (2022) *An Introduction to Conservation Biology*. 3rd Ed. Oxford: Oxford University Press.

Volis, S. (2019) *Plant Conservation: The Role of Habitat Restoration*. Cambridge: Cambridge University Press.

Websites

www.britishecologicalsociety.org/publications/journals/	British Ecological Society journals (free access)
cieem.net	Chartered Institute of Ecology and Environmental Management (CIEEM) (General reference)

www.iucn.org	International Union for Conservation of Nature and Natural Resources (IUCN) (General reference)
post.parliament.uk	POST 'Sourcing reliable and impartial scientific research for Parliament' (Research)
onlinelibrary.wiley.com	Wiley Online Library (Research and articles)

Journals and articles

Ajzen, I. (1991) 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*, 50(2), pp. 179–211. Available at: https://doi.org/10.1016/0749-5978(91)90020-T.

Atkinson, J. and Bonser, S. (2020) '"Active" and "passive" ecological restoration strategies in meta-analysis', *Restoration Ecology*, 28(5), pp. 1032–1035. Available at: https://doi.org/10.1111/rec.13229.

Banks-Leite, C. et al. (2020) 'Countering the effects of habitat loss, fragmentation, and degradation through habitat restoration', *One Earth*, 3(6), pp. 672–676. Available at: https://doi.org/10.1016/j.oneear.2020.11.016.

Bullock, J. et al. (2011) 'Restoration of ecosystem services and biodiversity: conflicts and opportunities', *Trends in Ecology and Evolution*, 26(10), pp. 541–549. Available at: https://doi.org/10.1016/j.tree.2011.06.011.

Dai, H. et al. (2024) 'Communities in ecosystem restoration: The role of inclusive values and local elites' narrative innovations', *People and Nature*, 6(4), pp. 1655–1657. Available at: https://doi.org/10.1002/pan3.10675.

Eck, T., Soyoung, A. and Yunseon, C. (2023) 'Environmental interpretation and socio-cognitive mindfulness: A literature review', *Journal of Outdoor Recreation and Tourism*, 44, Part B, 100704. Available at: https://doi.org/10.1016/j.jort.2023.100704.

Gawecka, K.A. and Bascompte, J. (2021) 'Habitat restoration in spatially explicit metacommunity models', *Journal of Animal Ecology*, 90(5), pp. 1239–1251. Available at: https://doi.org/10.1111/1365-2656.13450.

Holmes, G., Rowland, G. and Fox, K. (2024) 'Eager about beavers? Understanding opposition to species reintroduction, and its implications for conservation', *People and Nature*, 6(4), pp. 1524–1537. Available at: https://doi.org/10.1002/pan3.10674.

Perino, A. et al. (2019) 'Rewilding complex ecosystems', *Science*, 354, 6438. Available at: https://doi.org/10.1126/science.aav5570.

Ren, Q. and Folta, E. (2020) 'Evaluating environmental interpretation with mixed method: A case study at the International Crane Foundation, Wisconsin', *Journal of Interpretation Research*, 21(2). Available at: https://doi.org/10.1177/109258721602100202.

Suding, K. (2011) 'Toward an era of restoration in ecology: Successes, failures, and opportunities ahead', *Annual Review of Ecology, Evolution, and Systematics*, 42, pp. 465–487. Available at: https://doi.org/10.1146/annurev-ecolsys-102710-145115.

Walker, E. et al. (2024) 'Cultural stewardship in urban spaces: Reviving Indigenous knowledge for the restoration of nature', *People and Nature*, 6(4), pp. 1696–1712. Available at: https://doi.org/10.1002/pan3.10683.

Xie, C. et al. (2023) 'Evaluating the effectiveness of environmental interpretation in national parks based on visitors' spatiotemporal behavior and emotional experience: A case study of Pudacuo National Park, China', *Sustainability*, 15(10), 8027. Available at: https://doi.org/10.3390/su15108027.

Links

This unit links to the following related units:

Unit 3: Managing a Successful Project (Pearson-set)

Unit 5: Principles of Ecology and their Applications

Unit 7: Practical Conservation and Land Management

Unit 9: Research Project (Pearson-set)

Unit 10: Wildlife Conservation.

12.0 Appendices

Appendix 1: Mapping of HND in Animal Conservation and Countryside Management for England against FHEQ Level 5 qualification descriptors

Key

Key for outcome classifications	
KU	Knowledge and understanding
CS	Cognitive skills
AS	Applied skills (referred to as practical skills by QAA)
TS	Transferable skills

Mapping knowledge, skill and behaviour programme outcomes

FHEQ Level 5 descriptor		HND in Animal Conservation and Countryside Management for England
Knowledge and critical understanding of the well-established principles of their area(s) of study, and of the way in which those principles have developed.	KU1	Knowledge and understanding of the fundamental principles and practices of the contemporary global animal management industry.
	KU2	Knowledge and understanding of the animal industries' external environment and its impact on local, national and global levels of strategy, behaviour, management and sustainability.
	KU3	Understanding and insight into different animal management practices, their diverse nature, purposes, structures and operations, and their influence on the external environment.
	KU4	A critical understanding of the ethical, legal, professional and operational frameworks within which the animal industries operate.
	KU5	A critical understanding of processes, procedures and practices for effective management of products, services and people.

FHEQ Level 5 descriptor		HND in Animal Conservation and Countryside Management for England
	KU6	A critical understanding of the evolving concepts, theories and models within the study of animal management across a range of practical and hypothetical scenarios.
	KU7	An ability to evaluate and analyse a range of concepts, theories and models to make appropriate animal management decisions.
	KU8	An appreciation of the concepts and principles of continuing professional development (CPD), staff development, leadership and reflective practice as methods and strategies for personal and people development.
Ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context.	AS1	Evidence the ability to show client relationship management and develop appropriate policies and strategies to meet stakeholder expectations.
	AS2	Apply innovative animal management ideas to develop and create new products or services that respond to the changing nature of the animal industries.
	AS3	Integrate theory and practice through the investigation and examination of practices in the workplace.
	AS4	Develop outcomes for clients/businesses using appropriate practices and data to make justified recommendations.
	CS1	Apply knowledge and understanding of essential concepts, principles and models within the contemporary global animal industries.
	CS2	Develop different strategies and methods to show how resources (human, financial and information) are integrated and effectively managed to successfully meet objectives.

FHEQ Level 5 descriptor		HND in Animal Conservation and Countryside Management for England
Knowledge of the main methods of enquiry in the subject(s) relevant to the named award, and ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study.	CS3	Critically evaluate current principles of the animal industries, and their application to problem solving.
	CS4	Apply project management tools/techniques for reporting and planning, control and problem solving.
	CS5	Critique a range of animal management technology systems and operations, and their application, to maximise and successfully meet strategic objectives.
	KU9	Knowledge and understanding of how the animal industries influence the development of people and businesses.
	KU10	An understanding of the appropriate techniques and methodologies used to resolve real-life problems in the workplace.
An understanding of the limits of their knowledge, and how this influences analysis and interpretations based on that knowledge.	TS1	Develop a skill set to enable the evaluation of appropriate actions taken for solving problems in a specific animal management context.
	TS2	Self-reflection, including self-awareness; the ability to become an effective independent student and appreciate the value of the self-reflection process.
Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis.	TS3	Competently use digital literacy to access a broad range of research sources, data and information.
	CS6	Interpret, analyse and evaluate a range of data, sources and information to inform evidence-based decision-making.
	CS7	Synthesise knowledge and critically evaluate strategies and plans to understand the relationship between theory and real-world animal industry scenarios.

FHEQ Level 5 descriptor		HND in Animal Conservation and Countryside Management for England
Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences and deploy key techniques of the discipline effectively.	TS4	Communicate confidently and effectively, both orally and in writing, internally and externally, with animal industry professionals and other stakeholders.
	TS5	Communicate ideas and arguments in an innovative manner using a range of digital media.
	TS6	Demonstrate strong interpersonal skills, including effective listening and oral communication skills, as well as the associated ability to persuade, present, pitch and negotiate.
	AS5	Locate, receive and respond to a variety of information sources (e.g. textual, numerical, graphical and computer-based) in defined contexts.
Undertake further training, develop existing skills and acquire new competences that will enable them to assume significant responsibility within organisations.	TS7	Identify personal and professional goals for CPD to enhance competence to practise within a chosen animal industries field.
	TS8	Take advantage of available pathways for CPD through higher education and professional body qualifications.
The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and decision-making.	TS9	Develop a range of skills to ensure effective team working, independent initiatives, organisational competence and problem-solving strategies.
	TS10	Reflect adaptability and flexibility in approach to animal management, showing resilience under pressure and meeting challenging targets within given deadlines.
	TS11	Use quantitative skills to manipulate data and evaluate and verify existing theory.

FHEQ Level 5 descriptor		HND in Animal Conservation and Countryside Management for England
	TS12	Emotional intelligence and sensitivity to diversity in relation to people and cultures.
	CS8	Evaluate the changing needs of the animal industries and have confidence to self-evaluate and undertake additional CPD as necessary.

Table 9: Animal Conservation and Countryside Management HND programme outcomes by FHEQ descriptor

Appendix 2: HNC/HND Animal Conservation and Countryside Management for England programme outcomes for students

	Knowledge and understanding										Cognitive skills								Applied skills					Transferable skills											
Unit	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12
1	X		X	X	X	X	X			X	X	X			X	X	X	X	X		X		X	X		X	X	X	X		X	X	X	X	X
2	X			X	X			X	X	X		X	X	X	X				X	X		X	X	X	X		X	X	X	X		X	X	X	X
3	X	X	X		X	X	X		X		X	X	X	X	X	X		X	X		X	X	X		X	X			X	X	X	X	X		X
4	X	X		X		X	X	X	X	X	X		X			X	X		X	X		X	X		X	X	X	X	X		X	X		X	X	X
5		X	X	X	X	X	X		X	X	X	X	X		X		X	X	X		X	X	X	X		X	X	X		X	X	X		X	X
6	X			X		X		X		X	X	X		X	X		X		X	X	X		X		X		X	X	X	X	X		X	X	
7	X	X	X		X	X	X	X	X	X	X		X				X	X		X	X	X	X	X		X	X	X		X	X			X	X
8		X	X		X	X	X		X	X		X	X	X	X	X		X	X	X		X	X	X	X	X		X		X	X	X		X	X	X
9	X	X	X	X	X			X	X		X	X		X	X	X			X	X		X			X	X	X		X	X		X		X	X	X
10	X		X	X	X	X	X	X		X	X	X	X			X		X	X		X		X	X	X	X	X		X	X	X		X	X	
11	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X			X		X	X	X			X	X	X
12		X		X		X		X	X	X	X	X		X	X		X	X		X	X	X		X	X		X	X	X		X	X		X	X

Table 10: HNC/HND Animal Conservation and Countryside Management programme outcomes for students

Appendix 3: Transferable skills mapping

Level 4 Higher National Certificate in Animal Conservation and Countryside Management for England: mapping of transferable employability and academic study skills

Transferable skills based on the three domains of competence, and clusters of 21st-century competencies published by the Committee on Defining Deeper Learning and 21st Century Skills, and adapted by Pearson Edexcel.

Skill set	**Cognitive skills**							**Intrapersonal skills**				**Interpersonal skills**		
Unit	Problem-solving	Critical thinking/ analysis	Decision-making	Effective communication	Digital literacy	Numeracy	Creativity	Plan and prioritise	Self-management	Independent learning	Self-reflection	Teamwork	Leadership	Cultural awareness
1	X	X	X		X		X	X	X			X	X	X
2	X		X	X	X			X		X	X	X		X
3	X		X	X	X		X		X	X	X		X	X
4		X		X		X		X		X		X	X	X
5		X	X	X	X	X		X	X		X	X		
6	X		X	X	X		X	X	X	X	X		X	X
7	X	X		X	X	X		X	X	X		X		

Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England: mapping of transferable employability and academic study skills

Skill set	Cognitive skills							Intrapersonal skills				Interpersonal skills		
Unit	Problem solving	Critical thinking/ analysis	Decision-making	Effective communication	Digital literacy	Numeracy	Creativity	Plan and prioritise	Self-management	Independent learning	Self-reflection	Teamwork	Leadership	Cultural awareness
8	X		X		X	X	X		X	X	X			
9	X	X	X	X				X			X	X	X	X
10	X	X		X	X	X		X	X	X		X	X	X
11	X	X	X	X			X		X	X	X		X	
12	X		X	X		X	X	X	X		X	X	X	X

Table 11: Transferable skills mapping

Appendix 4: Pearson BTEC Level 5 Higher National Diploma in Animal Conservation and Countryside Management for England, mapped to Level 4/5 countryside ranger apprenticeship standard

	Knowledge								Skills												Behaviours			
Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	X		X	X	X		X	X	X		X	X	X	X		X	X	X	X		X	X	X	X	
2		X	X		X	X	X		X	X	X		X	X	X	X		X	X	X	X	X	X		X
3		X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
4	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X		X	X
5	X		X		X	X				X	X	X	X	X		X	X	X		X	X	X	X	X	X
6	X	X	X	X	X	X	X	X	X		X		X	X	X		X	X	X	X	X		X	X	X
7	x	X	X	X	X	X	X		X	X			X	X	X	X		X	X	X	X	X		X	
8		X	X	X	X	X		X	X		X	X	X	X		X	X	X		X	X		X	X	X
9	X	X		X	X	X	X	X		X	X		X	X	X	X	X	X	X	X		X	X	X	
10		X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X		X	X		X	
11	X	x	X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X
12	X		X	X		X	X	X		X	X	X	X	X		X	X		X	X	X	X	X		X

Table 12: Animal Conservation and Countryside Management HND mapped to countryside ranger apprenticeship standard

November 2025