

BTEC

HIGHER NATIONALS

Animal Management

Specification

First Teaching from September 2018

First Certification from September 2019



**Higher National
Certificate Lvl 4**

**Higher National
Diploma Lvl 5**

About Pearson

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Summary of changes in Pearson BTEC Higher Nationals in Animal Management Issue 5

Summary of changes made between previous issue and this current issue	Page number
<i>Unit 23: Biological Principles (LO4 Essential Content)</i> 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.	239-240

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 Introduction

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

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 employer's needs. Therefore, Pearson BTEC Higher National qualifications are widely recognised by industry and higher education as the principal vocational qualification at Levels 4 and 5.

When developing the Pearson BTEC Higher National qualifications in Animal Management, we collaborated with a wide range of students, employers, higher education providers, colleges and subject experts to ensure that the new qualifications meet their needs and expectations. We also worked closely with the relevant Professional Bodies, to ensure alignment with recognised professional standards.

There is now a greater emphasis on employer engagement and work readiness. The new Pearson BTEC Higher National qualifications in Animal Management are designed to reflect this increasing need for high quality professional and technical education pathways at Levels 4 and 5, thereby providing students with a clear line of sight to employment and to progression to a degree at Level 6.

1.1 The Student Voice

Students are at the heart of what we do. That is why, from the outset, we consulted with students in the development of these qualifications. We involved them in writing groups, sought their feedback, and added their voices and views to those of other stakeholders.

The result, we believe, are qualifications that will meet the needs and expectations of students worldwide.

1.2 Why choose Pearson BTEC Higher Nationals?

Pearson BTEC Higher Nationals are designed to help students secure the knowledge skills and behaviours needed to succeed in the workplace. They represent the latest in professional standards and provide opportunities for students to develop behaviours for work, for example by undertaking a group project, or responding to a client brief. A student may even achieve exemption from professional or vendor qualifications, or student membership of selected professional bodies, to help them on their journey to professional competence.

At the same time the BTEC Higher Nationals are intended to keep doors open for future study should a student wish to progress further in their education after their level 5 study. They do this by allowing space for the development of higher education study skills, such as the ability to research. Clear alignment of level of demand with the Framework for Higher Education qualification descriptors at level 4 and 5 means that students wishing to progress to level 6 study should feel better prepared. The Pearson BTEC Higher Nationals address these various requirements by providing:

- A range of core, optional and specialist units, each with a clear purpose, so there is something to suit each student's choice of programme and future progression plans.
- Fully revised content that is closely aligned with the needs of employers, professional bodies, vendors and higher education for a skilled future workforce.
- The opportunity to develop transferable skills useful for work and for higher education, including research skills, the ability to meet deadlines and communication skills.
- Learning Outcomes mapped against Professional Body standards and vendor accreditation requirements, where appropriate.
- Assessments and projects chosen to help students progress to the next stage (this means some are set by the centre to meet local needs, while others are set by Pearson). Students are required to apply their knowledge to a variety of assignments and activities, with a focus on the holistic development of practical, interpersonal and higher level thinking skills.
- An approach to demand at level 4 and 5 which is aligned with the Framework for Higher Education Qualifications (FHEQ).
- Support for student and tutors including Schemes of Work and Example Assessment Briefs.

1.3 HN Global

Pearson BTEC Higher Nationals are supported by a specially designed range of digital resources, to ensure that tutors and students have the best possible experience during their course. These are available from the HN Global website (<http://www.highernationals.com/>).

With HN Global, tutors can access programme specifications which contain useful information on programme planning and Quality Assurance processes. Tutors can also view Schemes of Work and Example Assessment Briefs, helping them create meaningful courses and assessments. HN Global also allows tutors to create and annotate reading lists for their students and also keep up-to-date on the latest news regarding HN programmes.

1.4 Qualification Titles

1.4.1 Pearson BTEC Level 4 Higher National Certificate in Animal Management

Specialist pathways are included within brackets in the qualification title:

- Pearson BTEC Level 4 Higher National Certificate in Animal Management (Animal Behaviour and Welfare)
- Pearson BTEC Level 4 Higher National Certificate in Animal Management (Animal Science)
- Pearson BTEC Level 4 Higher National Certificate in Animal Management (Veterinary Practice Management)
- Pearson BTEC Level 4 Higher National Certificate in Animal Management (Equine Management)
- Pearson BTEC Level 4 Higher National Certificate in Animal Management (General)
- Pearson BTEC Level 4 Higher National Certificate in Animal Management (Wildlife and Countryside Conservation)

1.4.2 Pearson BTEC Level 5 Higher National Diploma in Animal Management

Specialist pathways are included within brackets in the qualification title:

- Pearson BTEC Level 5 Higher National Diploma in Animal Management (Animal Behaviour and Welfare)
- Pearson BTEC Level 5 Higher National Diploma in Animal Management (Animal Science)
- Pearson BTEC Level 5 Higher National Diploma in Animal Management (Veterinary Practice Management)
- Pearson BTEC Level 5 Higher National Diploma in Animal Management (Equine Management)
- Pearson BTEC Level 5 Higher National Diploma in Animal Management (General)
- Pearson BTEC Level 5 Higher National Diploma in Animal Management (Wildlife and Countryside Conservation)

1.5 Qualification codes

Ofqual Regulated Qualifications Framework (RQF) Qualification numbers:

Pearson BTEC Level 4 Higher National Certificate in Animal Management: **603/2771/6**

Pearson BTEC Level 5 Higher National Diploma in Animal Management: **603/2772/8**

1.6 Awarding institution

Pearson Education Ltd.

1.7 Key features

Pearson BTEC Higher National qualifications in Animal Management offer:

- A stimulating and challenging programme of study that will be both engaging and memorable for students.
- The essential subject knowledge that students need to progress successfully into further study or the world of work.
- A simplified structure: students undertake a substantial core of learning in the Higher National Certificate and can build on this in the Higher National Diploma, with optional units linked to their specialist area of study.
- Specialist pathways in the Level 4 Certificate and Level 5 Diploma, so there is something to suit each student's preference of study and future progression plans.
- Refreshed content that is closely aligned with Professional Body, employer and higher education needs.
- Assessments that consider cognitive skills (what students know) along with affective and applied skills (respectively how they behave and what they can do)
- Unit-specific grading and Pearson-set assignments.
- A varied approach to assessment that supports progression to Level 6 and also allows centres to offer assessment relevant to the local economy, thereby accommodating and enhancing different learning styles.
- Quality assurance measures – as outlined in *sections 6 and 7* of this Programme Specification – to ensure that all stakeholders (e.g. professional bodies, universities, colleges and students) can feel confident in the integrity and value of the qualifications.
- A qualification designed to meet the needs and expectations of students aspiring to work in an international Animal Management environment.

Qualification frameworks

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

1.8 Collaborative development

Students completing their BTEC Higher Nationals in Animal Management will be aiming to go on to employment or progress to a final year at university. Therefore, it was essential that we developed these qualifications in close collaboration with experts from professional bodies and universities, and with the providers who will be delivering the qualifications.

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.

- Belfast Metropolitan College
- Chichester College
- Dearne Valley College
- Dudley College
- Hartpury College (Associate Faculty of the University of the West of England)
- Kirkless College
- National Farmers Union (NFU)
- National Land-based College
- North Lindsey College
- North Shropshire College
- Royal College of Veterinary Surgeons (RCVS)
- Wiltshire College & University Centre
- Veterinary Practice Management Association (VPMA)

2 Programming purpose and objectives

2.1 Purpose of the Pearson BTEC Higher Nationals in Animal Management

The purpose of Pearson BTEC Higher Nationals in Animal Management is to develop students as professional, self-reflecting individuals able to meet the demands of employers in the Animal Management sector and adapt to a constantly changing world. The qualifications aim to widen access to higher education and enhance the career prospects of those who undertake them.

2.2 Objectives of the Pearson BTEC Higher Nationals in Animal Management

The objectives of the Pearson BTEC Higher Nationals in Animal Management are as follows:

- To equip students with Animal Management skills, knowledge and the understanding necessary to achieve high performance in the global Animal Management environment.
- To provide education and training for a range of careers in Animal Management, including Animal Behaviour and Welfare, Animal Science, Veterinary Practice Management and Equine Management.
- To provide insight and understanding into the diversity of roles within Animal Management, recognising the importance of collaboration at all levels.
- To equip students with knowledge and understanding of culturally diverse organisations, cross-cultural issues, diversity and values.
- To provide opportunities for students to enter or progress in employment in Animal Management, or progress to higher education qualifications such as an Honours degree in Animal Behaviour and Welfare, Animal Science, Equine Science or a related area.
- To provide opportunities for students to develop the skills, techniques and personal attributes essential for successful working lives.
- To support students to understand the local, regional and global context of Animal Management and, for those students with a global outlook, to aspire to international career pathways.
- To provide students with opportunities to address contemporary issues facing the industry, and society at large; with particular emphasis on sustainability and the environment, recognising the role that Animal Management plays in addressing these issues.

- To provide opportunities for students to achieve a nationally-recognised professional qualification within their chosen area of specialisation.
- To provide opportunities for students to achieve certifications.
- To offer students the chance of career progression in their chosen field, with particular emphasis on achieving management-level positions, professional recognition and beyond.
- To allow flexibility of study and to meet local or specialist needs.
- To offer a balance between employability skills and the knowledge essential for students with entrepreneurial, employment or academic aspirations.
- To provide students with opportunities to engage in an industry-recognised apprenticeship scheme that aligns with their employer's needs and their own career aspirations.
- To provide students with the context in which to consider professional ethics and their relation to personal, professional and statutory responsibilities within the industry.

We meet these objectives by:

- Providing a thorough grounding in Animal Management principles that leads the student to a range of specialist progression pathways relating to individual professions within the sector.
- Equipping individuals with commercial acumen, understanding and Animal Management skills for success in a range of the roles in this sector.
- Enabling progression to a university degree by supporting the development of appropriate academic study skills.
- Enabling progression to further professional qualifications in specific Animal Management areas by mapping to units in a range of professional qualifications.

Who is this qualification for?

The Pearson BTEC Higher National qualifications in Animal Management are aimed at students wanting to continue their education through applied learning. Pearson BTEC Higher Nationals provide a wide-ranging study of Animal Management and are designed for students who wish to pursue or advance their career in an aspect of Animal Management. In addition to the knowledge, understanding and skills that underpin the study of Animal Management, Pearson BTEC Higher Nationals in Animal Management give students experience of the breadth and depth of the sector that will prepare them for further study or training.

2.3 Aims of the Pearson BTEC Level 4 Higher National Certificate in Animal Management

The Pearson BTEC Level 4 Higher National Certificate in Animal Management offers students a broad introduction to the subject area via a mandatory core of learning, while allowing for the acquisition of skills and experience through the selection of specialist and optional units across a range of occupational sectors at Level 4. This effectively builds underpinning core skills while preparing the student for progression onto Level 5. Students will gain a wide range of sector knowledge tied to practical skills gained in research, self-study, directed study and workplace scenarios.

At Level 4 students develop a broad knowledge and awareness of key aspects of Animal Management through three core units, which include one unit assessed by a Pearson-set assignment. The units are:

- Animal Health and Welfare
- Business and the Business Environment
- Managing a Successful Project (Pearson-set unit).

There is a 'general pathway' and five 'specialist pathways'. Depending on the 'specialist pathway', at Level 4, students will undertake a further two or three specialist units (related to their Level 4 Pathway) from:

Pathway	Specialist Units
General	There are no specialist units identified
Animal Behaviour and Welfare	<ul style="list-style-type: none">• Animal Behaviour in Society• Animal Husbandry• Animal Anatomy and Physiology
Animal Science	<ul style="list-style-type: none">• Animal Anatomy and Physiology• Animal Nutrition• Ecological Principles
Veterinary Practice Management	<ul style="list-style-type: none">• Veterinary Practice Management• Animal Nursing• Clinic Design and Processes
Equine Management	<ul style="list-style-type: none">• Horse Husbandry• Management of Equine Facilities• Animal Anatomy and Physiology
Wildlife and Countryside Conservation	<ul style="list-style-type: none">• Managing Environmental Resources• Endangered Species Conservation

If the 'general pathway' is chosen then five further optional units will need to be identified at Level 4. If a 'specialist pathway' is chosen then either two or three, dependent on the pathway, further optional units at Level 4 will need to be identified from the following:

Specialist units (above) are also available as optional units.

- Management of Exotic Animal Species
- Animal Collection Management
- Human Resource Management
- Marketing Essentials
- Equitation (Riding)
- Horse and Human Relationship
- Equestrian Performance
- Management Accounting
- Principles of Ecology and their Applications
- Plant Identification and Classification
- British Wildlife
- Teaching in a Specialist Subject

Graduates successfully completing the Higher National Certificate will be able to demonstrate a sound knowledge of the basic concepts of Animal Management. They will be able to communicate accurately and appropriately and they will have the qualities needed for employment that requires some degree of personal responsibility. They will have developed a range of transferable skills to ensure effective team working, independent initiatives, organisational competence and problem-solving strategies. They will be adaptable and flexible in their approach to Animal Management, show resilience under pressure, and meet challenging targets within a given resource.

2.4 Aims of the Pearson BTEC Level 5 Higher National Diploma in Animal Management

The Pearson BTEC Level 5 Higher National Diploma in Animal Management offers students the opportunity to continue on their chosen pathway, whether this is the 'general pathway' or the five 'specialist pathways' designed to support progression into relevant occupational areas or on to degree-level study. These pathways are linked to Professional Body standards (where appropriate) and can provide professional status and progression to direct employment.

The Pearson BTEC Level 5 Higher National Diploma continues to offer the following specialist pathways for students who wish to concentrate on a particular aspect of Animal Management:

- Animal Behaviour and Welfare
- Animal Science

- Veterinary Practice Management
- Equine Management
- Wildlife and Countryside Conservation

The non-specialist 'General Animal Management pathway', allows students to complete a Pearson BTEC Level 5 Higher National Diploma without committing to a particular professional specialism. This offers additional flexibility to providers and students.

Students will typically progress from Level 4 to Level 5 within the same specialist pathway. (See *section 4.1* for information about units and progression). Where students may wish to change pathway, when progressing from Level 4 to Level 5, Centres may undertake a mapping of Recognised Prior Learning (RPL) to determine whether the student has sufficient knowledge and experience to be a suitable candidate for the Level 5 subject of study. (See *section 8 Recognition of Prior Learning and Attainment*.)

Holders of the Pearson BTEC Level 5 Higher National Diploma will have developed a sound understanding of the principles in their field of study and will have learned to apply those principles more widely. They will have learned to evaluate the appropriateness of different approaches to solving problems. They will be able to perform effectively in their chosen field and will have the qualities necessary for employment in situations requiring the exercise of personal responsibility and decision-making.

2.5 What could these qualifications lead to?

The Level 4 Higher National Certificate provides a solid grounding in Animal Management, which students can build on should they decide to continue their studies beyond the Certificate stage. The Level 5 Higher National Diploma allows students to specialise by committing to specific career paths and progression routes to degree-level study.

On successful completion of the Pearson BTEC Level 5 Higher National Diploma, students can develop their careers in the Animal Management sector through:

- Entering employment
- Continuing existing employment
- Linking with the appropriate Professional Body
- Linking with the appropriate certificates
- Committing to Continuing Professional Development (CPD)
- Progressing to university.

2.5.1 Progression to university

The Pearson BTEC Level 5 Higher National Diploma is recognised by Higher Education providers as meeting admission requirements to many relevant Animal Management-related courses, for example:

- BSc (Hons) in Animal Behaviour and Welfare
- BSc (Hons) in Animal Management
- BSc (Hons) in Applied Animal Science
- BA (Hons) in Equine Business Management
- BSc (Hons) in Equine Management
- BSc (Hons) in Wildlife and Countryside Management

Students should always check the entry requirements for degree programmes at specific Higher Education providers. After completing a Pearson BTEC Higher National Certificate or Diploma, students can also progress directly into employment.

University recognition and articulations

We work with a range of higher education institutions around the world that recognise and accept BTEC Higher Nationals as a qualification for entry onto an undergraduate degree. Many universities allow advanced entry onto the second or third year of a degree, and agreements can include credit transfer, articulation and case-by-case admission. Students should be aware that university admission criteria are always subject to change and remain at the discretion of the institution. Students should take time to understand the course entry requirements for subject, year and grade before applying.

For more information on entry requirements, including 2+1 articulations, please visit: <https://www.highernationals.com/degree-finder>.

2.5.2 Employment

The skills offered as part of the Pearson BTEC Higher National Diploma can provide graduates with the opportunity to work in many different areas of the Animal Management sector. Below are some examples of job roles each qualification could lead to.

Pathway	Job Roles
Animal Behaviour and Welfare	Animal Keeper Animal Controls Officer Animal Health Officer Animal Trainer Wildlife Technician Retail Supervisor

Pathway	Job Roles
	Animal Instructor Animal Behaviour Consultant Pet Store Manager Animal Rescue Centre Manager Animal Lecturer
Animal Science	Laboratory Technician Research Officer Veterinary Care Assistant Animal Nutritionist Medical Sales Representative Animal Science Lecturer
Veterinary Practice Management	Veterinary Practice Manager Sales Representative Animal Instructor Animal Centre Manager Pet Store Manager Kennel and Cattery Manager
Equine Management	Horse Riding Instructor Freelance Events Organiser Horse Breeder Horse Trainer Head Groom Equine Yard Manager Professional Horse Rider Equine Activity Centre Manager Equine Instructor/Lecturer
Wildlife and Countryside Management	Countryside Ranger Ecology Officer Environmental Data Collection Officer Environmental Education Officer Nature Recovery Officer Planning and Environment Advisor Wildlife Adviser

2.6 Use of Maths and English within the curriculum

Those working within the Animal Management sector cannot just rely on their technical skills and must ensure they develop all relevant employability skills to increase employment opportunities. For example, they will be required to communicate appropriately with stakeholders throughout their career, so the ability to use maths and English in a professional context is an essential employability skill that must be developed at all levels of study.

Development of essential maths and English skills are embedded throughout these qualifications in accordance with industry requirements and below are some examples of how these skills are developed in the Pearson BTEC Higher National curriculum:

- Written reports
- Formal presentations
- Informal conversations
- Use of professional, sector-specific language

Some aspects of Animal Management require high level maths skills and we strongly recommend all students complete diagnostic maths assessments preferably before beginning a Higher National course, as well as having an A* to C grade and/or 9 to 4 in GCSE Maths, prior to starting the course (see Entry requirements in *section 3.2* of this specification).

2.7 How Pearson BTEC Higher Nationals in Animal Management provide both transferable employability skills and academic study skills

Students need both relevant qualifications and employability skills to enhance their career prospects and contribute to their personal development. Pearson BTEC Higher National in Animal Management qualifications embed throughout the programme the development of key skills, attributes and strengths required by 21st century employers.

Where employability skills are referred to in this specification, this generally refers to skills in five main categories:

- **Cognitive and problem-solving skills:** critical thinking, approaching non-routine problems by applying expert and creative solutions, use of systems and digital technology, generating and communicating ideas creatively.
- **Intra-personal skills:** self-management, adaptability and resilience, self-monitoring and self-development, self-analysis and reflection, planning and prioritising.
- **Interpersonal skills:** effective communication and articulation of information, working collaboratively, negotiating and influencing, self-presentation.

- **Commercial skills:** sector awareness; sales; marketing/promotion; budget management/monitoring;
- **Business skills:** awareness of types of companies, company formation, invoicing, calculating fees, business management.

Pearson Example Assessment Briefs (EABs) make recommendations for a range of real or simulated assessment activities, for example, group work where appropriate, to encourage development of collaborative and interpersonal skills or a solution focused case study to provide the opportunity to develop cognitive skills. There are specific requirements for the assessment of these skills, as relevant, within the assessment grids for each unit. Example Assessment Briefs are for guidance and support only and **must** be customised and amended according to localised needs and requirements. All assignments must still be verified as per the internal verification process.

Students can also benefit from opportunities for deeper learning, where they are able to make connections between units and select areas of interest for detailed study. In this way Pearson BTEC Higher Nationals provide a vocational context in which students can develop the knowledge and academic study skills required for progression to university degree courses, including:

- Active research skills
- Effective writing skills
- Analytical skills
- Critical thinking
- Creative problem-solving
- Decision-making
- Team building
- Exam preparation skills
- Digital literacy
- Competence in assessment methods used in higher education.

To support you in developing these skills in your students, we have developed a map of Higher Education relevant transferable and academic study skills, available in appendices.

3 Planning your programme

3.1 Delivering the Pearson BTEC Higher Nationals in Animal Management

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

Assess your students very carefully to ensure that they take the right qualification and the right pathways or optional units, to allow them to progress to the next stage. You should check the qualification structures and unit combinations carefully when advising students.

You will need to ensure that your students have access to a full range of information, advice and guidance in order to support them in making the necessary qualification and unit choices. When students are recruited, you need to give them accurate information on the title and focus of the qualification for which they are studying.

3.2 Entry requirements and admissions

Although Pearson do not specify formal entry requirements, as a centre it is your responsibility to ensure that the students you recruit have a reasonable expectation of success on the programme.

For students who have recently been in education, the entry profile is likely to include one of the following:

- A BTEC Level 3 qualification in Animal Management or Horse 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 A* to C and/or 9 to 4 (or equivalent)
- Other related Level 3 qualifications
- An Access to Higher Education Diploma awarded by an approved further education institution
- Related work experience
- An international equivalent of the above.

Centres may wish to consider applicants' prior learning when considering their acceptance on a Pearson BTEC Higher Nationals, through Recognition of Prior Learning.

(For further information please refer to *section 8* of this document.)

3.2.1 English language requirements for Higher Nationals

Pearson's mission is to help people make more of their lives through learning. In order for students to be successful on Pearson BTEC Higher National qualifications which are **both** taught and assessed in English, it is critical that they have an appropriate level of English language skills.

The following clarifies the requirements for all centres when recruiting applicants on to new Pearson BTEC Higher National qualifications.

All centres delivering the new Pearson BTEC Higher National qualifications must ensure that all students who are non-native English speakers and who have not undertaken their final two years of schooling in English, can demonstrate capability in English at a standard equivalent to the levels identified below, before being recruited to the programme **where the programme is both taught and assessed in English**:

- Common European Framework of Reference (CEFR) level B2
- PTE 51
- IELTS 5.5; Reading and Writing must be at 5.5
- or equivalent.

It is up to the centre to decide what proof will be necessary to evidence individual student proficiency.

The following clarifies the requirements for all centres when recruiting applicants on to new Pearson BTEC Higher National qualifications which are taught in a language other than English, but are assessed in English.

All centres delivering the new Pearson BTEC Higher National qualifications **wholly or partially** in a language other than English, but who are assessed in English, must ensure that all students can demonstrate capability in English at a standard equivalent to the levels identified below, on completion of the programme:

- Common European Framework of Reference (CEFR) level B2
- PTE 51
- IELTS 5.5; Reading and Writing must be at 5.5
- or equivalent.

It is up to the centre to decide what proof will be necessary to evidence individual student proficiency.

3.2.2 Centre approval

To ensure that centres are ready to assess students and that we can provide the support that is needed all centres must be approved before they can offer these qualifications. For more information about becoming a centre and seeking approval to run our qualifications please visit the support section on our website (<http://qualifications.pearson.com/>).

3.2.3 Level of sector knowledge required

We do not set any requirements for tutors, but we do recommend that centres assess the overall skills and knowledge of the teaching team, which should be relevant, up to date and at the appropriate level.

3.2.4 Resources required

As part of your centre approval, you will need to show that the necessary material resources and work spaces are available to deliver Pearson BTEC Higher Nationals. For some units, specific resources are required, this is clearly indicated in the unit descriptors.

3.2.5 HN Global support

HN Global is an online resource that supports centre planning and delivery of Pearson BTEC Higher Nationals by providing appropriate teaching and learning resources. For further information see *Sections 5 and 6* of this Programme Specification.

3.2.6 Modes of delivery

Subject to approval by Pearson, centres are free to deliver BTEC Higher Nationals using modes of delivery that meet the needs of their students. We recommend making use of a wide variety of modes, including:

- Full-time
- Part-time
- Blended learning.

3.2.7 Recommendations for employer engagement

Pearson BTEC Higher Nationals are vocational qualifications and as an approved centre you are encouraged to work with employers on the design, delivery and assessment of the course. This will ensure that students enjoy a programme of study that is engaging and relevant, and which equips them for progression. There are suggestions in *section 5.2* about how employers could become involved in delivery and/or assessment, but these are not intended to be exhaustive and there will be other possibilities at a local level.

3.2.8 Support from Pearson

We provide a range of support materials, including Schemes of Work and suggested assignments, with supporting templates. You will be allocated an External Examiner early in the planning stage, to support you with planning your assessments, and there will be training events and support from our Subject Leads.

3.2.9 Student employability

All Pearson BTEC Higher Nationals have been designed and developed with consideration of National Occupational Standards, where relevant.

Employability skills such as team working and entrepreneurialism as well as practical hands-on skills have been built into the design of the learning aims and content. This gives you the opportunity to use relevant contexts, scenarios and materials to enable students to develop a portfolio of evidence demonstrating the breadth of their skills and knowledge in a way that equips them for employment.

3.3 Access to study

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

Our policy regarding access to our qualifications is that:

- They should be available to everyone who is capable of reaching the required standards.
- They should be free from any barriers that restrict access and progression.

There should be equal opportunities for all those wishing to access the qualifications. We refer Centres to our Pearson Equality and Diversity Policy, which can be found in the support section of our website (<http://qualifications.pearson.com/>).

Centres are required to recruit students to Higher National programmes with integrity. They will need to make sure that applicants have relevant information and advice about the qualification, to make sure it meets their needs. Centres should review the applicant's prior qualifications and/or experience to consider whether this profile shows that they have the potential to achieve the qualification. For students with disabilities and specific needs, this review will need to take account of the support available to the student during the teaching and assessment of the qualification. For further guidance and advice please refer to *Section 9* on reasonable adjustments.

3.4 Student registration and entry

All students should be registered for the qualification, and appropriate arrangements made for internal and external verification. For information on making registrations for the qualification, you will need to refer to the information manual available in the support section of our website (<http://qualifications.pearson.com/>).

Students can be formally assessed only for a qualification on which they are registered. If students' intended qualifications change (for example, if a student decides to choose a different specialist pathway), then the centre must transfer the student to the chosen pathway appropriately. Please note that student work cannot be sampled if the student is not registered or is registered on an incorrect pathway.

3.5 Access to assessments

Assessments need to be administered carefully, to ensure that all students are treated fairly, and that results and certification are issued on time, allowing students to move on to chosen progression opportunities.

Our equality policy requires that all students should have equal opportunity to access our qualifications and assessments, and that 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 in legislation) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to students who do not share that characteristic.
- All students achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Further information on access arrangements can be found on the Joint Council for Qualifications website (<http://www.jcq.org.uk/>).

3.6 Administrative arrangements for internal assessment

3.6.1 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 (<http://qualifications.pearson.com/>). 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.

3.6.2 Reasonable adjustments to assessment

A reasonable adjustment is one that is made before a student takes an assessment, to ensure that he or she has 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 on the support section of our website (<http://qualifications.pearson.com/>).

3.6.3 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 (see previous paragraph). You can provide special consideration related to the period of time given for evidence to be provided, or for the format of the assessment (if it is equally valid). You may not substitute alternative forms of evidence to that required in a unit, or omit the application of any assessment criteria to judge attainment. Pearson can consider applications for special consideration in line with the policy, which can be found in the document linked above.

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.

3.6.4 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 is available on the support section of our website (<http://qualifications.pearson.com/>).

If your centre is located in England or Wales and the student is still dissatisfied with the final outcome of their appeal s/he 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.

3.7 Dealing with malpractice in assessment

'Malpractice' means acts that undermine the integrity and validity of assessment, the certification of qualifications, and/or that may damage the authority of those responsible for delivering the assessment and certification. Malpractice may arise, or be suspected, in relation to any unit or type of assessment within the qualification.

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

Further details regarding malpractice and advice on preventing malpractice by students, can be found in the support section of our website (<http://qualifications.pearson.com/>).

In the interests of students and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice. The procedures we ask you to adopt when tackling malpractice vary between units that are internally assessed and those that are externally assessed.

3.7.1 Internally assessed units

Centres are required to take steps to prevent malpractice and to investigate instances of suspected malpractice. Students must be given information that explains what malpractice is for internal assessment and how suspected incidents will be dealt with by the centre. Full information on dealing with malpractice and the actions we expect you to take is available on the support section of our website (<http://qualifications.pearson.com/>).

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

3.7.2 Student malpractice

Heads of centres are required to report incidents of any suspected student malpractice that occur during Pearson external assessments. We ask that centres do so by completing *JCQ Form M1* from the Joint Council for Qualifications website (<http://www.jcq.org.uk/>) and emailing it, along with any accompanying documents, (signed statements from the student, invigilator, copies of evidence, etc.), to the Investigations Team at **pqsmalpractice@pearson.com**. The responsibility for determining appropriate sanctions or penalties to be imposed on 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.

3.7.3 Tutor/centre malpractice

Heads of centres are required to inform Pearson's Investigations Team of any incident of suspected malpractice by centre staff, before any investigation is undertaken. Heads of centres are requested to inform the Investigations Team by submitting a *JCQ Form M2b* from the Joint Council for Qualifications website (<http://www.jcq.org.uk/>) with supporting documentation to **pqsmalpractice@pearson.com**. Where Pearson receives allegations of malpractice from other sources (for example, Pearson staff or anonymous informants), the Investigations Team will conduct the investigation directly or may ask the head of centre to assist.

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

Heads of centres/Principals/Chief Executive Officers or their nominees are required to inform students and centre staff suspected of malpractice of their responsibilities and rights; see 6.15 of *JCQ Suspected Malpractice in Examinations and Assessments Policies and Procedures* (www.jcq.org.uk).

Pearson reserves the right in cases of suspected malpractice to withhold the issue of results and/or certificates while an investigation is in progress. Depending on the outcome of the investigation, results and/or certificates may be released or withheld. We reserve the right to withhold certification when undertaking investigations, audits and quality assurances processes. You will be notified within a reasonable period of time if this occurs.

3.7.4 Sanctions and appeals

Wherever malpractice is proven, we may impose sanctions or penalties. Where student malpractice is evidenced, penalties may be imposed such as:

- Disqualification from the qualification
- Being barred from registration for Pearson qualifications for a specified period of time.

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

- Working with you to create an improvement action plan
- Requiring staff members to receive further training
- Placing temporary blocks on your certificates

- Placing temporary blocks on registrations of students
- Debarring staff members or the centre from delivering Pearson qualifications
- Suspending or withdrawing centre approval status.

Your centre will be notified if any of these apply. Pearson has established procedures for centres that are considering appeals against penalties and sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from heads of centres (on behalf of students and/or members or staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in our Enquiries and Appeals Policy available in the support section on our website (<http://qualifications.pearson.com/>).

In the initial stage of any aspect of malpractice, please notify the Investigations Team by email (**pqsmalpractice@pearson.com**), who will inform you of the next steps.

4 Programme structure

4.1 Units, credits, Total Qualification Time (TQT) and Guided Learning (GL)

The Pearson BTEC 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 Pearson BTEC 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 that an HND student would have achieved at least 90 credits at Level 4 before progressing to Level 5 units. This allows for the students to submit the remaining 30 credits at Level 4 while undertaking their Level 5 study.

Students undertaking an HND who fail to successfully complete the full qualification may be awarded an HNC, if their credit achievement permits.

Pearson BTEC Higher Nationals consist of core units, specialist units and optional units:

- Core units are mandatory
- Specialist units are designed to provide a specific occupational focus to the qualification and are aligned to Professional Body standards
- Required combinations of optional units are clearly set out in the tables below.

All units are usually 15 credits in value, or a multiple thereof. These units have been designed from a learning time perspective, and are expressed in terms of **Total Qualification Time (TQT)**. TQT is an estimate of the total amount of time that could reasonably be expected to be required for a student to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification. TQT includes undertaking each of the activities of Guided Learning, Directed Learning and Invigilated Assessment. Each 15-credit unit approximates to a Total Unit Time of 150 hours and 60 hours of Guided Learning.

Total Qualification Time (TQT) Higher National Certificate (HNC) = 1,200 hours

Total Qualification Time (TQT) Higher National Diploma (HND) = 2,400 hours

Examples of activities which can contribute to Total Qualification Time include:

- Guided Learning
- Independent and unsupervised research/learning
- Unsupervised compilation of a portfolio of work experience
- Unsupervised e-learning
- Unsupervised e-assessment

- Unsupervised coursework
- Watching a pre-recorded podcast or webinar
- Unsupervised work-based learning.

Guided Learning (GL) is defined as the time when a tutor is present to give specific guidance towards the learning aim being studied on a programme. This definition includes lectures, tutorials and supervised study in, for example, open learning centres and learning workshops. Guided Learning includes any supervised assessment activity; this includes invigilated examination and observed assessment and observed work-based practice.

Total Guided Learning (GL) Higher National Certificate (HNC) = 480 hours

Total Guided Learning (GL) Higher National Diploma (HND) = 960 hours

Some examples of activities which can contribute to Guided Learning include:

- Classroom-based learning supervised by a tutor
- Work-based learning supervised by a tutor
- Live webinar or telephone tutorial with a tutor in real time
- E-learning supervised by a tutor in real time

All forms of assessment which take place under the immediate guidance or supervision of a tutor or other appropriate provider of education or training, including where the assessment is competence-based and may be turned into a learning opportunity.

4.2 Programme structures

The programme structures specify:

- The total credit value of the qualification
- The minimum credit to be achieved at the level of the qualification
- The core units
- The specialist units
- The optional units
- The maximum credit value in units that can be centre commissioned.

When combining units for a Pearson BTEC Higher National qualification, it is the centre's responsibility to make sure that the correct combinations are followed.

4.2.1 Pearson BTEC Level 4 Higher National Certificate in Animal Management

- Qualification credit value: a minimum of 120 credits. This is made up of eight units, each with a value of 15 credits.
- **Total Qualification Time (TQT)** Higher National Certificate (HNC) = 1,200 hours
- **Total Guided Learning (GL)** Higher National Certificate (HNC) = 480 hours
- There is a required mix of Core, Specialist and Optional units totalling 120 credits. All units are at Level 4.
- In some cases a maximum of 30 credits from a Higher National qualification may be from units designed by the centre and approved by Pearson. Core units may **not** be substituted and are **mandatory**. For more information please refer to Higher National Commissioned Qualifications.
- Please note that some Specialist units are available as Optional units and some Optional units are available as Specialist units.

Pearson BTEC Level 4 Higher National Certificate in Animal Management (General)		Unit credit	Level
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Note: The selection of Specialist and Optional Units must not match the qualification structure of another pathway.			

Pearson BTEC Level 4 Higher National Certificate in Animal Management (Animal Behaviour and Welfare)		Unit credit	Level
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	4 *Animal Behaviour in Society	15	4
Specialist Unit	5 *Animal Husbandry	15	4
Specialist Unit	6 *Animal Anatomy and Physiology	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Note: The selection of Specialist and Optional Units must not match the qualification structure of another pathway.			

Pearson BTEC Level 4 Higher National Certificate in Animal Management (Animal Science)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	6 *Animal Anatomy and Physiology	15	4
Specialist Unit	7 *Animal Nutrition	15	4
Specialist Unit	8 *Ecological Principles	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Note: The selection of Specialist and Optional Units must not match the qualification structure of another pathway.			

Pearson BTEC Level 4 Higher National Certificate in Animal Management (Veterinary Practice Management)		Unit credit	Level
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	9 *Veterinary Practice Management	15	4
Specialist Unit	10 *Animal Nursing	15	4
Specialist Unit	11 *Clinic Design and Processes	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Note: The selection of Specialist and Optional Units must not match the qualification structure of another pathway.			

Pearson BTEC Level 4 Higher National Certificate in Animal Management (Equine Management)		Unit credit	Level
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	12 *Horse Husbandry	15	4
Specialist Unit	13 *Management of Equine Facilities	15	4
Specialist Unit	6 *Animal Anatomy and Physiology	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Note: The selection of Specialist and Optional Units must not match the qualification structure of another pathway.			

Pearson BTEC Level 4 Higher National Certificate in Animal Management (Wildlife and Countryside Conservation)		Unit credit	Level
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	49 *Managing Environmental Resources	15	4
Specialist Unit	50 *Endangered Species Conservation	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Note: The selection of Specialist and Optional Units must not match the qualification structure of another pathway.			

Optional unit bank		Unit credit	Level
Optional Level 4 units:			
Optional Unit	4 *Animal Behaviour in Society	15	4
Optional Unit	5 *Animal Husbandry	15	4
Optional Unit	6 *Animal Anatomy and Physiology	15	4
Optional Unit	7 *Animal Nutrition	15	4
Optional Unit	8 *Ecological Principles	15	4
Optional Unit	9 *Veterinary Practice Management	15	4
Optional Unit	10 *Animal Nursing	15	4
Optional Unit	11 *Clinic Design and Processes	15	4
Optional Unit	12 *Horse Husbandry	15	4
Optional Unit	13 *Management of Equine Facilities	15	4
Optional Unit	14 Management of Exotic Animal Species	15	4
Optional Unit	15 Animal Collection Management	15	4
Optional Unit	16 Human Resource Management	15	4
Optional Unit	17 Marketing Essentials	15	4
Optional Unit	18 Equitation (Riding)	15	4
Optional Unit	19 Horse and Human Relationship	15	4
Optional Unit	20 Equestrian Performance	15	4
Optional Unit	21 Management Accounting	15	4
Optional Unit	22 Teaching in a Specialist Subject	15	4
Optional Unit	49 *Managing Environmental Resources	15	4
Optional Unit	50 *Endangered Species Conservation	15	4
Optional Unit	51 Principles of Ecology and their Applications	15	4
Optional Unit	52 Plant Identification and Classification	15	4
Optional Unit	53 British Wildlife	15	4

*Specialist units also available as an Optional unit

4.2.2 Pearson BTEC Level 5 Higher National Diploma in Animal Management

The Level 5 Higher National Diploma consists of the appropriate Level 4 Higher National Certificate (above) **plus** an additional 120 credits at Level 5 delivered via the following pathways:

- Animal Management (General)
- Animal Behaviour and Welfare
- Animal Science
- Veterinary Practice Management
- Equine Management
- Wildlife and Countryside Conservation

Students will typically progress within the pathways. Where a Centre may allow students to change pathways, from Level 4 to Level 5, they must undertake a suitable mapping of recognition of prior learning (RPL) in support of any potential review by an External Examiner.

- Qualification credit value: a minimum of 240 credits, of which 120 credits are at Level 5, and 120 credits are at Level 4 and usually attained via the HNC.
- There is a required mix of core, specialist and optional units totalling 240 credits. The Core units required for each Level 5 specialist pathway (in addition to the specialist units) are Biological Principles, which is weighted at 15 credits, and Research Project (Pearson-set), weighted at 30 credits.
- The requirements of the Higher National Certificate (or equivalent) have to be met.
- In some cases, a maximum of 60 credits (up to 30 at Level 4 and upto 30 at Level 5) can be imported from another RQF Pearson BTEC Higher National qualification and/or from units designed by the Centre and approved by Pearson. Core units and specialist units may **not** be substituted.

Pearson BTEC Level 5 Higher National Diploma in Animal Management (General)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Level 5 Units:			
Core Unit	23 Biological Principles	15	5
Core Unit	24 Research Project (Pearson-set)	30	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Note: The selection of Specialist and Optional Units, across Level 4 <i>and</i> Level 5, must not match the qualification structure of another pathway.			

Pearson BTEC Level 5 Higher National Diploma in Animal Management (Animal Behaviour and Welfare)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	4 *Animal Behaviour in Society	15	4
Specialist Unit	5 *Animal Husbandry	15	4
Specialist Unit	6 *Animal Anatomy and Physiology	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Level 5 Units:			
Core Unit	23 Biological Principles	15	5
Core Unit	24 Research Project (Pearson-set)	30	5
Specialist Unit	25 *Anthrozoology	15	5
Specialist Unit	26 *Evolution and Adaptations	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Note: The selection of Specialist and Optional Units, across Level 4 <i>and</i> Level 5, must not match the qualification structure of another pathway.			

Pearson BTEC Level 5 Higher National Diploma in Animal Management (Animal Science)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	6 *Animal Anatomy and Physiology	15	4
Specialist Unit	7 *Animal Nutrition	15	4
Specialist Unit	8 *Ecological Principles	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit or a Specialist Unit from another pathway	15	4
Level 5 Units:			
Core Unit	23 Biological Principles	15	5
Core Unit	24 Research Project (Pearson-set)	30	5
Specialist Unit	27 *Biochemistry and Medical Microbiology	15	5
Specialist Unit	28 *Chemistry for Biologists	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Note: The selection of Specialist and Optional Units, across Level 4 <i>and</i> Level 5, must not match the qualification structure of another pathway.			

Pearson BTEC Level 5 Higher National Diploma in Animal Management (Veterinary Practice Management)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	9 Veterinary Practice Management	15	4
Specialist Unit	10 Animal Nursing	15	4
Specialist Unit	11 Clinic Design and Processes	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Level 5 Units:			
Core Unit	23 Biological Principles	15	5
Core Unit	24 Research Project (Pearson-set)	30	5
Specialist Unit	29 *Advanced Patient Care	15	5
Specialist Unit	30 *Advanced Management Accounting	15	5
Optional Unit	Plus one Optional Level 5 unit or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit or a Specialist Unit from another pathway	15	5
Note: The selection of Specialist and Optional Units, across Level 4 <i>and</i> Level 5, must not match the qualification structure of another pathway.			

Pearson BTEC Level 5 Higher National Diploma in Animal Management (Equine Management)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	12 *Horse Husbandry	15	4
Specialist Unit	13 *Management of Equine Facilities	15	4
Specialist Unit	6 *Animal Anatomy and Physiology	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Level 5 Units:			
Core Unit	23 Biological Principles	15	5
Core Unit	24 Research Project (Pearson-set)	30	5
Specialist Unit	31 *Equine Health and Disease	15	5
Specialist Unit	32 *Therapy and Rehabilitation	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Note: The selection of Specialist and Optional Units, across Level 4 <i>and</i> Level 5, must not match the qualification structure of another pathway.			

Pearson BTEC Level 5 Higher National Diploma in Animal Management (Wildlife and Countryside Conservation)		Unit credit	Level
Level 4 Units:			
Core Unit	1 Animal Health and Welfare	15	4
Core Unit	2 Business and the Business Environment	15	4
Core Unit	3 Managing a Successful Project (Pearson-set)	15	4
Specialist Unit	49 *Managing Environmental Resources	15	4
Specialist Unit	50 *Endangered Species Conservation	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Optional Unit	Plus one Optional Level 4 unit (see below) or a Specialist Unit from another pathway	15	4
Level 5 Units:			
Core Unit	23 Biological Principles	15	5
Core Unit	24 Research Project (Pearson-set)	30	5
Specialist Unit	47 *Conservation and Biodiversity	15	5
Specialist Unit	48 *Environmental Management and Conservation	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Optional Unit	Plus one Optional Level 5 unit (see below) or a Specialist Unit from another pathway	15	5
Note: The selection of Specialist and Optional Units, across Level 4 and Level 5, must not match the qualification structure of another pathway.			

Optional unit bank		Unit credit	Level
Optional Level 4 units:			
Optional Unit	4 *Animal Behaviour in Society	15	4
Optional Unit	5 *Animal Husbandry	15	4
Optional Unit	6 *Animal Anatomy and Physiology	15	4
Optional Unit	7 *Animal Nutrition	15	4
Optional Unit	8 *Ecological Principles	15	4
Optional Unit	9 *Veterinary Practice Management	15	4
Optional Unit	10 *Animal Nursing	15	4
Optional Unit	11 *Clinic Design and Processes	15	4
Optional Unit	12 *Horse Husbandry	15	4
Optional Unit	13 *Management of Equine Facilities	15	4
Optional Unit	14 Management of Exotic Animal Species	15	4
Optional Unit	15 Animal Collection Management	15	4
Optional Unit	16 Human Resource Management	15	4
Optional Unit	17 Marketing Essentials	15	4
Optional Unit	18 Equitation (Riding)	15	4
Optional Unit	19 Horse and Human Relationship	15	4
Optional Unit	20 Equestrian Performance	15	4
Optional Unit	21 Management Accounting	15	4
Optional Unit	22 Teaching in a Specialist Subject	15	4
Optional Unit	49 *Managing Environmental Resources	15	4
Optional Unit	50 *Endangered Species Conservation	15	4
Optional Unit	51 Principles of Ecology and their Applications	15	4
Optional Unit	52 Plant Identification and Classification	15	4
Optional Unit	53 British Wildlife	15	4

*Specialist units also available as an Optional unit

Optional unit bank		Unit credit	Level
Optional Level 5 units:			
Optional Unit	25 *Anthrozoology	15	5
Optional Unit	26 *Evolution and Adaptations	15	5
Optional Unit	27 *Biochemistry and Medical Microbiology	15	5
Optional Unit	28 *Chemistry for Biologists	15	5
Optional Unit	29 *Advanced Patient Care	15	5
Optional Unit	30 *Advanced Management Accounting	15	5
Optional Unit	31 *Equine Health and Disease	15	5
Optional Unit	32 *Therapy and Rehabilitation	15	5
Optional Unit	33 Animal Breeding and Genetics	15	5
Optional Unit	34 Management of Animal Boarding Establishments	15	5
Optional Unit	35 Wildlife Conservation	15	5
Optional Unit	36 Ethics and Consultation	15	5
Optional Unit	37 Equitation II (Riding)	15	5
Optional Unit	38 Horse Event Management	15	5
Optional Unit	39 Advanced Equine Performance	15	5
Optional Unit	40 Sustainable Practices	15	5
Optional Unit	41 Work Experience	15	5
Optional Unit	42 Ornamental Aquatics and Fish Keeping	15	5
Optional Unit	43 Behavioural Approaches to Animal Management	15	5
Optional Unit	44 Humanisation of Companion Animals	15	5
Optional Unit	45 Habitat Restoration and Repair	15	5
Optional Unit	46 Woodland Management	15	5
Optional Unit	47 *Conservation and Biodiversity	15	5
Optional Unit	48 *Environmental Management and Conservation	15	5

*Specialist unit also available as an Optional unit

4.2.3 Meeting local needs

Centres should note that Pearson BTEC Higher National qualifications have been developed in consultation with centres, employers and relevant professional organisations. The units were designed to meet the skill needs of the sector and thereby allow coverage of the full range of employment within the sector. Centres should make maximum use of the choices available to them within the specialist pathways to meet the needs of their students, as well as the local skills and training needs.

Where centres identify a specific need that cannot be addressed using the units in this specification, centres can seek approval to use units from other RQF Pearson BTEC Higher National qualifications, through the MLN process (refer to *Commissioned qualification design and validation service* of our website

<http://qualifications.pearson.com> or get in touch your Pearson regional contact for application details. Centres will need to justify the rationale for importing units from other RQF Pearson BTEC Higher National specifications. **Meeting local need applications must be made in advance of delivery and before 31 January in the year of student registration.**

The flexibility to import standard units from other RQF Pearson BTEC Higher National specifications is **limited to a maximum of 30 credits in a BTEC HNC qualification and a maximum of 60 credits in a BTEC HND qualification (30 credits at Level 4 and 30 credits at Level 5)**. This is an overall maximum of units that can be imported. MLN units cannot be used at the expense of the mandatory units in any qualification nor can the qualification's rules of combination, as detailed in the specification, be compromised. It is the responsibility of the centre requesting the MLN to ensure that approved units are used only in eligible combinations.

For the **Pearson BTEC Higher National Certificate and Diploma in Animal Management**, the maximum number of credits that can be imported by pathway are as follows:

Qualification	Pathway	Import at Level 4	Import at Level 5
Pearson BTEC Level 4 Higher National Certificate in Animal Management	Animal Management (General)	30	-
	Animal Behaviour and Welfare	30	-
	Animal Science	30	-
	Veterinary Practice Management	30	-
	Equine Management	30	-
	Wildlife and Countryside Conservation	30	

Qualification	Pathway	Import at Level 4	Import at Level 5
Pearson BTEC Level 5 Higher National Diploma in Animal Management	Animal Management (General)	30	30
	Animal Behaviour and Welfare	30	30
	Animal Science	30	30
	Veterinary Practice Management	30	30
	Equine Management	30	30
	Wildlife and Countryside Conservation	30	30

4.2.4 Pearson BTEC Higher National Commissioned Development

Where MLN does not provide enough flexibility in terms of qualification structure, centres can request design and development of units by Pearson to meet their specific needs. This is offered by the following types of developments; full commission or partial commission.

We would be pleased to discuss your ideas for a Pearson BTEC Higher National Commissioned Development. For more information please refer to the *Commissioned qualification design and validation service* on our website <http://qualifications.pearson.com>

Once the centre is ready to proceed with a commissioned development, an application must be made, which provides a clear rationale for the development request. Pearson will review the application and may confirm or deny the request. The commissioned unit(s) will be authored by Pearson, in full consultation within the commissioning centre. Applications must be made one year in advance of the first year of commissioned unit(s) delivery.

4.3 Pearson-set Assignments

At both Level 4 and Level 5, as part of the core units, there are Pearson-set assignments. Each year, Pearson will issue a *Theme* and (for Level 4) a set of related *Topics*. Centres will develop an assignment, to be internally assessed, to engage students in work related to the Pearson-set Theme.

At Level 4, students will select a Topic to further define their approach to the Theme and assignment. At Level 5, it is expected that students will define their own Topic, in negotiation with Tutors, based on the Pearson-set Theme.

For example, from the Higher Nationals in Business:

Theme: "Corporate Social Responsibility (CSR) and its importance for sustainability and competitive advantage"

Level 4 Topics:

- How to start up a socially responsible company
- The impact of CSR on a functional area (e.g. HR, Marketing, Finance) within an organisation to promote profitability and financial sustainability.
- Implementing CSR activities within organisations to meet sustainability objectives.

Centres can find relevant support in the Pearson-set Assignment Guide for the units, and the theme and topic release documentation which will be provided for each level.

The aim of the Pearson-set assignments is to provide a common framework for centres to develop work that will allow cross-sector benchmarking, through the standardisation of student work, and identification and sharing of 'best practice.' in higher education teaching and learning. Pearson will share the 'best practice' results with all centres. For further information about Pearson-set Assignments and assessment, see **section 6.0 Assessment** of this document.

4.4 Optional Units

The Optional units available in the Higher Nationals in Animal Management are intended to provide Centres with a range of units that may be applicable to *any* pathway. These units have been written to provide scope for a Centre to tailor their course offer to include areas of additional content that provide a unique student experience.

As an example, at Level 4, a standard approach to Animal Behaviour and Welfare might see the following units offered:

Unit	Type	Credits
Unit 1 Animal Health and Welfare	Core	15
Unit 2 Business and the Business Environment	Core	15
Unit 3 Managing a Successful Project (Pearson-set)	Core	15
Unit 4 Animal Behaviour in Society	Specialist	15
Unit 5 Animal Husbandry	Specialist	15
Unit 6 Animal Anatomy and Physiology	Specialist	15
Unit 14 Management of Exotic Animal Species	Optional	15
Unit 15 Animal Collection Management	Optional	15

However, a Centre may choose to develop a more 'specialised' programme; with greater emphasis on Equine Management and offer:

Unit	Type	Credits
Unit 1 Animal Health and Welfare	Core	15
Unit 2 Business and the Business Environment	Core	15
Unit 3 Managing a Successful Project (Pearson-set)	Core	15
Unit 12 Horse Husbandry	Specialist	15
Unit 13 Management of Equine Facilities	Specialist	15
Unit 6 Animal Anatomy and Physiology	Specialist	15
Unit 18 Equitation (Riding)	Optional	15
Unit 20 Equestrian Performance	Optional	15

In each example, students would have the key skills for Animal Management (through practice-based units at Level 4 and Level 5), but will have a unique experience based on the combination of Optional units offered by the Centre.

In addition to the designated Optional units, a Centre may also choose to include one of the Specialist units from another pathway; thereby, further expanding the scope of units that may be combined to form the qualification.

4.5 Recommended Level 4 and Level 5 Unit Combinations

To ensure that students studying at Level 5 are enabled to engage with the learning and teaching provided within Optional Units, we recommend that careful consideration be given to the units offered at Level 4 and how these prepare the student for Level 5 Optional Units.

The following table provides guidance as to recommended Level 4 unit(s) that should be offered, in order that students are prepared for the corresponding Level 5 unit(s).

Combination of Level 4 Units	Level 5 Unit
Unit 4 Animal Behaviour in Society Unit 5 Animal Husbandry	Unit 26 Evolution and Adaptations
Unit 6 Animal Anatomy and Physiology	Unit 23 Biological Principles Unit 27 Biochemistry and Medical Microbiology
Unit 10 Animal Nursing	Unit 29 Advanced Patient Care
Unit 9 Veterinary Practice Management Unit 21 Management Accounting	Unit 30 Advanced Management Accounting
Unit 8 Ecological Principles	Unit 35 Wildlife Conservation Unit 40 Sustainable Practices
Unit 12 Horse Husbandry Unit 13 Management of Equine Facilities	Unit 31 Equine Health and Disease
Unit 18 Equitation (Riding)	Unit 37 Equitation II (Riding)
Unit 51 Principles of Ecology and their Applications Unit 52 Plant Identification and Classification Unit 53 British Wildlife	Unit 35 Wildlife Conservation Unit 45 Habitat Restoration and Repair Unit 46 Woodland Management

4.6 The Unit Descriptor

The Unit Descriptor is how we define the individual units of study that make up a Higher National qualification. Students will study and complete the units included in the programme offered at your centre.

We have described each part of the unit, as below. You may refer to any of the Unit Descriptors in *Section 10* of this programme specification.

Unit Title	A broad statement of what the unit will cover.
Unit Code	The Ofqual unit designation
Unit Type	There are three unit types: core (mandatory to all pathways); specialist (mandatory to specific pathways); and optional (available to most pathways)
Unit level	All Higher National Certificate units are at Level 4 and all Higher National Diploma are at Level 5
Credit value	The credit value is related to total qualification time (TQT) and unit learning hours (ULH), and is easy to calculate. 1 credit is equal to 10 ULH, so 15 credits are equal to 150 ULH. To complete a Higher National Certificate or Diploma students are expected to achieve the appropriate number of credits
Introduction	Some general notes on the unit, setting the scene, stating the purpose, outlining the topics and skills gained on completion of the unit
Learning Outcomes	The Learning Outcomes are explicit statements that clearly express what students will be able to do after the completion of the unit. There are, typically, 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

Each unit sets out the 'Pass', 'Merit' and 'Distinction' criteria for that unit. When assignments are graded, a tutor will refer to this table, which connects the unit's Learning Outcomes with the student's work. This assignment may be graded at 'Pass', 'Merit' or 'Distinction level, depending on the quality of the students work.

Recommended Resources

Lists the resources appropriate to support the study of this unit. This includes books, journals and online material to support learning. The programme tutor may suggest alternatives and additions, usually with a local application or relevance.

Web resources – referencing:

Some units have web resources as part of their recommended resources lists. Hyperlinking to these resources directly can be problematic as locations and addresses of resources can change over time. To combat this 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 name of the section or element of the website where the resource can be found
- [4] The type of resource it is, which may be one of the following –
 - o research
 - o general reference
 - o tutorials
 - o training
 - o e-books
 - o report
 - o wiki
 - o article
 - o datasets
 - o development tool
 - o discussion forum

Web

- | | |
|--|--|
| [1] sdbb.db.aist.go.jp | [2] National Institute for Advanced Industrial Science and Technology (AIST) |
| | [3] Spectral Database for Organic Compounds, SDBS |
| | [4] (General reference) |
| [1] rsc.org | [2] Royal Society of Chemistry |
| | [3] Learn Chemistry |
| | [4] (General reference) |

5 Teaching and learning

The aim of this section is to provide guidance to Centres so that they can engage students in a dynamic, interactive and reflective learning experience. This experience should effectively prepare students to successfully engage in the assessments, which will measure depth, as well as breadth, of knowledge. Teaching should stimulate academic engagement, develop challenging yet constructive discourse and encourage students to reflect on their own performance in preparation for a professional career. Additionally, Centres are encouraged to expose students to autonomous and independent learning, which will facilitate the development of their academic skills, experiences and techniques required as they progress from one level of study to the next.

Centres are encouraged to develop programmes that have a distinctive focus on entry into work, delivering a curriculum that embeds employability, has a strong commitment to ethics and diversity, and introduces students to contemporary as well as seminal research. All teaching and learning should reflect the expectations of employers and society, and be informed and guided by external benchmarks such as professional and statutory bodies. In so doing students completing a Higher National in Animal Management will have the attributes, skills, principles and behaviours that will enable them to make a valuable contribution to local, national and international commerce.

The contributions students make to their own experiences, alongside the experience of their peers, is invaluable. Student engagement and the student voice should form a significant aspect of a student's life. Centres are encouraged to gather student opinions on a range of teaching and learning matters, which would be used to inform and enhance future practice within a programme of study and within a Centre.

5.1 Delivering quality and depth

A high quality teaching and learning experience should include qualified and experienced lecturers, an interactive and engaging curriculum, motivated and inspired students, and a support system that caters for the pastoral as well as academic interests of students.

In addition to delivering a quality learning experience, Centres must also encourage students to have a deeper understanding of the subject where they are able to go beyond the fundamentals of explaining and describing. Students are expected to show they can analyse data and information, make sense of this and then reach evaluative judgements. At the higher levels of study there is an expectation that students will be able to apply a degree of criticality to their synthesis of knowledge. This criticality would come from exposure to appropriate and relevant theories, concepts and models.

One of the reasons for delivering a quality learning experience, which has depth as well as breadth, is the benchmarking of the qualification to the Framework for Higher Education Qualifications (FHEQ). It also meets requirements set by the Regulated Qualifications Framework (RQF). The first stage of a Higher National in Animal Management is the Higher National Certificate (HNC), which is aligned with Level 4 of both frameworks; with the Higher National Diploma (HND) aligned with Level 5. This means that the HNC has the same level of demand and expectations as the first year of a degree programme, with the HND having the same level of demand and expectations as the second year of a degree programme.

Centres are expected to provide a broadly similar experience for students to that which they would have if they attended a similar programme at a university. This could mean:

- Providing access to library facilities which has, as a minimum, available copies (physically and/or electronically) of all required reading material
- Access to research papers and journals
- Utilising a virtual learning environment (VLE) to support teaching
- Working with local employers (see below) to present real-life case studies
- Creating Schemes of Work that embrace a range of teaching and learning techniques
- Listening to the student voice.

Irrespective of the type of programme on which a student is enrolled, it is highly advisable that students are inducted onto their Higher National programme. This induction should include an introduction to the course programme and academic study skills that will be essential in supporting their research and studies, and, therefore, enhance the learning experience.

An induction programme should consist of the following:

- Course programme overview
- Preparing for lessons
- Effective engagement in lectures and seminars
- Making the most out of their tutor
- Assignment requirements
- Referencing and plagiarism
- Centre policies
- Academic study skills.

Pearson offer Higher National Global Study Skills to all students – an online toolkit that supports the delivery, assessment and Quality Assurance of BTECs in Centres. This is available on the HN Global website www.hignationals.com. HN Global

provides a wealth of support to ensure that tutors and students have the best possible experience during their course.

In addition, there is a wide range of free-to-access websites that can be used to support students in developing their learning and academic study skills.

5.2 Engaging with employers

Just as the student voice is important, so too is the employer's. Employers play a significant role in the design and development of all regulated qualifications, including the Higher Nationals in Animal Management. This input should extend into the learning experience, where engagement with employers will add value to students, particularly in transferring theory into practice.

Centres should consider a range of employer engagement activities. These could include:

- Field trips to local Zoos or Equestrian Centres
- Inviting members of the local RSPCA centre to present guest lectures
- Using employers to judge the quality of assessed presentations and/or products
- (For the more entrepreneurial) establishing a panel of experts who students can pitch an idea to.

While detailed guidance on assessment has been provided in this specification (see *section 6*), it is worth considering the involvement of employers when determining assessment strategies and the use of different assessment vehicles. This enables Centres to design assessments that are more closely related to what students would be doing in the workplace. Employers are able to comment on relevance and content, as well as the challenge presented by an assessment. Notwithstanding this, ultimately it is the Centre's responsibility to judge the extent to which any employer contributes to teaching and learning.

5.3 Engaging with students

Students are integral to teaching and learning. As such it is important that they are involved as much as possible with most aspects of the programme on to which they are enrolled. This input could include taking into account their views on how teaching and learning will take place, their role in helping to design a curriculum, or on the assessment strategy that will test their knowledge and understanding.

There are many ways in which to capture the student voice and student feedback, both formal and informal. Formal mechanisms include the nomination of student representatives to act as the collective student voice for each student cohort, student representation at course team meetings, and an elected Higher Education representative as part of the Student Union. Student forums should also take place periodically throughout the year with minutes and action plans updated and informing the overall annual course monitoring process. Unit specific feedback can

also be collated by students completing unit feedback forms, end of year course evaluations, and scheduled performance review meetings with their tutor.

However, this should not be the only time when feedback from students is sought. Discourse with students should be constant, whereby tutors adopt a 'reflection on action' approach to adjust teaching, so that students are presented with an environment that is most supportive of their learning styles. Just as employers could have an input into assessment design, so too could students. This will support the development of assignments that are exciting and dynamic, and fully engage students in meaningful and informative assessment.

The biggest advantage of consulting students on their teaching, learning and assessment is securing their engagement in their own learning. Students are likely to feel empowered and develop a sense of ownership of all matters related to teaching, learning and assessment, not just their own experiences. Students could also view themselves as more accountable to their lecturers, ideally seeing themselves as partners in their own learning and not just part of a process.

5.4 Planning and structuring a programme

Learning should be challenging yet exciting; teaching should be motivating and inspirational. Consequently, both teaching and learning should form part of a programme structure that is active, flexible and progressive, and has an industry focus wherever possible.

It is important for a programme structure to be effectively planned, taking into account the nature of the student cohort, the primary mode of delivery (face-to-face or distance learning) and the level of study. It is also advisable to consider the student voice (whether that voice is heard through end of programme feedback, or through on-going dialogue) when planning how and when students will be exposed to a particular subject. One other vital source of information that centres would do well to embrace is the feedback from tutors who have been and/or will be delivering learning.

It is recommended that centres establish a programme planning forum where various stakeholders are represented. This forum could consider different perspectives of teaching and learning and how these are planned into an effective programme structure. Consideration could be given to, for example, the holistic and consistent use of Virtual Learning Environments (VLEs), a programme of field trips, a strategy for engaging with employers, and how and when to assess learning.

Consideration should be given to a number of factors when planning a programme structure. These include:

- The sequencing of units
- Whether to have condensed or expanded delivery
- Teaching and learning techniques.

5.4.1 Sequencing units

The level of demand embedded within a unit is benchmarked to recognised standards. This applies to all units within a level of study, and this means that all Level 4 units have similar demands, as do all Level 5 units. However, this does not mean that units can, or should, be delivered in any order. For example, in the Higher National Diploma in Animal Management it is strongly advised that Level 4 units are delivered, and achieved, by students before progression to Level 5. However, students are able to progress to Level 5 with a minimum of 90 credits at Level 4.

Within each level it is advisable to sequence units so that those providing fundamental knowledge and understanding are scheduled early in the programme. It may also be advisable to schedule the assessment of units requiring the practice and application of more advanced skills later in the programme.

For example, at Level 4, *Unit 1 Animal Health and Welfare* and *Unit 3 Business and the Business Environment* could be the first two units that Higher National Certificate students are exposed to. The former introduces students to the fundamentals of the sector, how it is structured and the internal and external factors that influence strategy and operations. The latter provides students with an opportunity to gain an understanding of how organisations operate and how they are managed and led. At Level 5 Centres could sequence, for example, *Unit 23 Biological Principles* before *Unit 33 Animal Breeding and Genetics*. The former provides a broader understanding of the biological workings of animals, with the latter using part of this knowledge to develop a deeper understanding of animal breeding and heredity and variations in animals.

5.4.2 Condensed and expanded delivery

The next consideration is whether to deliver a unit in a condensed format alongside other units, or to deliver units over an extended period. The following tables provide examples of this, based on four units being delivered in one teaching block.

Condensed version:

Weeks 1 to 6	Week 7	Weeks 8 to 13	Week 14
Unit 1	Assessment	Unit 3	Assessment
Unit 2		Unit 4	

Expanded version:

Weeks 1 to 12	Weeks 13 and 14
Unit 1	Assessment
Unit 2	
Unit 3	
Unit 4	

Mixed version:

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Unit 1													Assessment
Unit 2						Assessment	Unit 3						
Unit 4													

The decision to deliver a condensed, expanded or mixed programme would depend on a number of factors, including availability of resources, the subjects to be taught and the requirements of students. Each version has advantages: the condensed version would provide an opportunity for students to gain early success and achievement. This will enhance their self-efficacy, the sense of one's belief in one's ability to succeed, and self-confidence, with tutors being able to identify and respond

to less able students early in the teaching and learning cycle. The advantages of the expanded version include providing a longer timescale for students to absorb new knowledge and therefore, potentially, improve success, and giving tutors an opportunity to coach and support less able students over a longer period of time. The mixed version, with some units spanning over the entire period and others lasting for shorter periods, provides opportunities for learning in some units to support development in others. This format may be particularly suited to a combination of practical and theoretical units. In all cases, the choice of which type of unit sequence must consider student opportunities as well as staff and physical resources of the Centre.

As there are pros and cons to both approaches, the use of a planning forum would help to ensure the most suitable approach is taken. For example, Centres could choose to deliver the first teaching block using the expanded version, with the subsequent teaching block being delivered through a condensed approach.

It should be noted that the above consideration would apply equally to programmes that are being delivered face-to-face or through distance learning.

5.4.3 Drawing on a wide range of delivery techniques

As part of planning the range of techniques that will be used to deliver the syllabus, centres should also consider an appropriate combination of techniques for the subject.

The table below lists some of the techniques that centres could introduce into a planned programme structure.

Technique	Face-to-face	Distance learning
Lectures and seminars	These are the most common techniques used by tutors. They offer an opportunity to engage with a large number of students, where the focus is on sharing knowledge through the use of presentations.	Delivery would be through video conferencing and/or pre-recorded audio and/or visual material, available through an online platform. Synchronous discussion forums could also be used.
Workshops	These are used to build on knowledge shared via tutors and seminars. Teaching can be more in-depth where knowledge is applied, for example to case studies or real-life examples. Workshops could be student-led, where students present, for example, findings from independent study.	While more challenging to organise than for face-to-face delivery, workshops should not be dismissed. Smaller groups of three or four students could access a forum simultaneously and engage in the same type of activity as for face-to-face.

Technique	Face-to-face	Distance learning
Tutorials	These present an opportunity for focused one-to-one support, where teaching is led by an individual student's requirements. These can be most effective in the run up to assessment, where tutors can provide more focused direction, perhaps based on a formative assessment.	Other than not necessarily being in the same room as a student, tutors could still provide effective tutorials. Video conferencing tools provide the means to see a student, which makes any conversation more personal.
Virtual Learning Environments (VLEs)	These are invaluable to students studying on a face-to-face programme. Used effectively, VLEs not only provide a repository for taught material such as presentation slides or handouts, but could be used to set formative tasks such as quizzes. Further reading could also be located on a VLE, along with a copy of the programme documents, such as the handbook and assessment timetable.	A VLE is a must if students are engaged with online delivery through distance or blended learning, as this would be the primary or the key source of learning. Where distance learning is primarily delivered through hard copies of workbooks, etc., the same principle would apply as for face-to-face learning.
Blended learning	The combination of traditional face-to-face learning and online learning. This can enable the students to gain personalised support, instruction and guidance while completing assigned activities and tasks remotely.	Offline learning enables students to develop autonomy and self-discipline by completing set activities and tasks with limited direction and traditional classroom-based constraints.

Technique	Face-to-face	Distance learning
Work-based learning	Any opportunity to integrate work-based learning into a curriculum should be taken. This adds realism and provides students with an opportunity to link theory to practice in a way in which case studies do not. Many full-time students are involved in some form of employment, either paid or voluntary, which could be used, where appropriate, as part of their learning, for example when assignments require students to contextualise a response to a real organisation.	It is likely that the majority of distance learning students would be employed and possibly classed as mature students. Bringing theory to life through a curriculum, which requires work-based application of knowledge, would make learning for these students more relevant and meaningful. Perhaps more importantly, assessment should be grounded in a student's place of work, wherever possible.
Guest speakers	These could be experts from industry or visiting academics in the subject area that is being studied. They could be used to present a lecture/seminar, a workshop or to contribute to assessment. The objective is to make the most effective use of an expert's knowledge and skill by adding value to the teaching and learning experience.	As long as the expert has access to the same platform as the students then the value-added contribution would still be very high. Consideration would need to be given to timings and logistics, but with some innovative management this technique would still have a place in distance learning programmes.
Field trips	Effectively planned field trips, which have a direct relevance to the syllabus, would add value to the learning experience. Through these trips students could relate theory to practice, have an opportunity to experience organisations in action, and potentially open their minds to career routes.	The use of field trips could be included as part of a distance learning programme. They will add the same value and require the same planning. One additional benefit of field trips for distance learning is that they provide an opportunity for all students in a cohort to meet, which is a rare occurrence for distance learning students.

5.4.4 Assessment considerations

Centres should design assessment for learning. This is where an assessment strategy requires students to engage with a variety of assessment tools that are accessible, appropriately challenging, and support the development of student self-efficacy and self-confidence. To ensure that assignments are valid and reliable, Centres must implement robust Quality Assurance measures and monitor the effectiveness of their implementation (see *section 7* of this Programme Specification). This includes ensuring that all students engage in assessment positively and honestly.

Assessment also provides a learning opportunity for all stakeholders of the assessment to have access to feedback that is both individual to each student and holistic to the cohort. Feedback to students should be supportive and constructive. Student self-efficacy (and therefore self-confidence) can be significantly enhanced where feedback not only focuses on areas for improvement but recognises the strengths a student has. At the cohort level, similar trends could be identified that inform future approaches to assessments and teaching. Assessment is an integral part of the overall learning process and assessment strategy must be developed to support effective, reflective, thinking practitioners for the future. Assessment can be either formative, summative or both.

5.4.5 Formative assessment

Formative assessment is primarily developmental in nature and designed to give feedback to students on their performance and progress. Assessment designed formatively should develop and consolidate knowledge, understanding, skills and competencies. It is a key part of the learning process and can enhance learning and contribute to raising standards.

Through formative assessment tutors can identify students' differing learning needs early on in the programme and so make timely corrective interventions. Tutors can also reflect on the results of formative assessment to measure how effective the planned teaching and learning is at delivering the syllabus. Each student should receive one set of written formative feedback, otherwise some students may feel that others are being given more than their share of verbal feedback.

5.4.6 Summative assessment

Summative assessment is where students are provided with the assignment grades contributing towards the overall unit grade. For summative assessment to be effective it should also give students additional formative feedback to support on-going development and improvement in subsequent assignments. All formative assessment feeds directly into the summative assessment for each unit and lays the foundations from which students develop the necessary knowledge and skills required for the summative assessment.

5.4.7 Assessment feedback

Effective assessment feedback is part of continuous guided learning which promotes learning and enables improvement. It also allows students to reflect on their performance and helps them understand how to make effective use of feedback. Constructive and useful feedback should enable students to understand the strengths and limitations of their performance, providing positive comments where possible as well as explicit comments on how improvements can be made. Feedback should reflect the learning outcomes and grading criteria to also help students understand how these inform the process of judging the overall grade.

The timing of the provision of feedback and of the returned assessed work also contributes to making feedback effective. Specific turnaround time for feedback should be agreed and communicated with both tutors and students. Timing should allow students the opportunity to reflect on the feedback and consider how to make use of it in forthcoming assessments, taking into account the tutor's workload and ability to provide effective feedback.

5.4.8 Designing valid and reliable assessments

To help ensure valid and reliable assignments are designed and are consistent across all units, centres could consider a number of actions.

Use of language

The first aspect of an assignment that a centre could focus on is ensuring that language makes tasks/questions more accessible to students.

Due consideration must be given to the command verbs (i.e. the verbs used in unit assessment criteria) when considering the learning outcomes of a unit. Assignments must use appropriate command verbs that equate to the demand of the learning outcome. If the outcome requires 'analysis' then 'evaluative' requirements within the assignment must not be set when testing that outcome. This would be viewed as over-assessing. Similarly, it is possible to under-assess where analytical demands are tested using, for example, explanatory command verbs.

The following can be used as a guide to support assignment design:

- Ensure there is a holistic understanding (by tutors and students) and use of command verbs.
- Set assignment briefs that use a single command verb, focusing on the highest level of demand expected for the learning outcome(s) that is (are) being tested.
- Assignments should be supported by additional guidance that helps students to interpret the demand of the assessment criteria.

- Time-constrained assessments should utilise the full range of command verbs (or acceptable equivalents) appropriate to the academic level. Modes of time-constrained assessments include in-class tests and exams that could be both open- or closed-book. Centres should pay close consideration to ensuring tests and exams are not replicated during the course of the year.

Consistency

This relates to the consistency of presentation and structure, the consistent use of appropriate assessment language, and the consistent application of grading criteria. Where assignments are consistent, reliability is enhanced. Where validity is present in assignments this will result in assignments that are fit for purpose and provide a fair and equitable opportunity for all students to engage with the assignment requirements.

Employing a range of assessment tools

Just as variation in teaching methods used is important to the planning of a programme structure, so too is the use of a range of assessment tools appropriate to the unit and its content. Centres should consider taking a holistic view of assessment, ensuring a balanced assessment approach with consideration given to the subject being tested and what is in the best interests of students. As mentioned above, consultation with employers could add a sense of realism to an assessment strategy. (A comprehensive list of assessment tools is provided in section 6.2 *Setting effective assignments*).

No matter what tool is used, assignments should have a sector focus (whether this is in a workplace context or through a case study), and be explicitly clear in its instructions. In the absence of a case study a scenario should be used to provide some context. Finally, students should be clear on the purpose of the assignment and which elements of the unit it is targeting.

6 Assessment

BTEC Higher Nationals in Animal Management are assessed using a combination of internally assessed **centre-devised internal assignments** (which are set and marked by centres) and internally assessed **Pearson-set assignments** (which are set by Pearson and marked by centres). Pearson-set assignments are mandatory and target particular industry-specific skills. The number and value of these units are dependent on qualification size:

- For the HNC, one core, 15 credit, unit at Level 4 will be assessed by a mandatory Pearson-set assignment targeted at particular skills;
- For the HND, two core units: one core, 15 credit, unit at Level 4 and one core, 30 credit, unit at Level 5, will be assessed by a mandatory Pearson-set assignment targeted at particular skills;
- all other units are assessed by centre-devised internal assignments.

The purpose and rationale of having Pearson-set units on Higher Nationals is as follows:

Standardisation of student work – Assessing the quality of student work, that it is meeting the level and the requirements of the unit across all centres, that grade decisions and assessor feedback are justified, and that internal verification and moderation processes are picking up any discrepancies and issues. The Pearson-set units will be included in the annual sampling of units by the External Examiner.

Sharing of good practice – We will share good practice in relation to themes such as innovative approaches to delivery, the use of digital literacy, enhancement of student employability skills and employer engagement. **These themes will align to those for QAA Higher Education Reviews.**

An appointed External Examiner (EE) for the centre will ask to sample the Pearson-set assignment briefs in advance of the external examination visit. The focus will be on both standardisation of student assessed work and sharing of good practice with all EE feedback collated and presented in one External Examiner report for each of the units at the end of the year. This will support centres in developing effective assessment strategies, building on good practice and learning from one another.'

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

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

6.0.1 Example Assessment Briefs

Each unit has supporting Example Assessment Briefs that are available to download from the course materials section on our website (<http://qualifications.pearson.com/>). The Example Assessment Briefs are there to give you an example of what the assessment will look like in terms of the feel and level of demand of the assessment.

The Example Assessment Briefs, with the exception of the mandatory Pearson-set unit, provide tutors with suggested types of assignment and structure that can be adopted and, if so, **must be** adapted accordingly.

6.1 Principles of internal assessment

This section gives an overview of the key features of internal assessment and how you, as an approved centre, can offer it effectively. The full requirements and operational information are given in the Pearson Quality Assurance Handbook available in the support section of our website (<http://qualifications.pearson.com/>). All the assessment team will need to refer to this document.

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

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

6.1.1 Assessment through assignments

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

An assignment is issued to students as an **assignment brief** with a hand-out date, a completion date and clear requirements for the evidence that students are expected to provide. There may be specific observed practical components during the assignment period. Assignments can be divided into separate parts and may require several forms of evidence. A valid assignment will enable a clear and formal assessment outcome based on the assessment criteria.

6.1.2 Assessment decisions through applying unit-based criteria

Assessment decisions for BTEC Higher Nationals are based on the specific criteria given in each unit and set at each grade level. The criteria for each unit have been defined according to a framework to ensure that standards are consistent in the qualification and across the suite as a whole. The way in which individual units are written provides a balance of assessment of understanding, practical skills and vocational attributes appropriate to the purpose of the qualifications.

The assessment criteria for a unit are hierarchical and holistic. For example, if an M criterion requires the student to show 'analysis' and the related P criterion requires the student to 'explain', then to satisfy the M criterion a student will need to cover both 'explain' and 'analyse'. 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. In *Appendix 3* we have set out a definition of terms that assessors need to understand.

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

- **To achieve a Pass**, a student must have satisfied all the Pass criteria for the learning outcomes, showing coverage of the unit content and therefore attainment at Level 4 or 5 of the national framework.
- **To achieve a Merit**, a student must have satisfied all the Merit criteria (and therefore the Pass criteria) through high performance in each learning outcome.
- **To achieve a Distinction**, a student must have satisfied all the Distinction criteria (and therefore the Pass and Merit criteria), and these define outstanding performance across the unit as a whole.

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

6.1.3 The assessment team

It is important that there is an effective team for internal assessment. There are three key roles involved in implementing assessment processes in your centre, each with different interrelated responsibilities, and these roles are listed below. Full information is given in the Pearson Quality Assurance Handbook available in the support section of our website (<http://qualifications.pearson.com/>).

- **The Programme Leader** has overall responsibility for the programme, its assessment and internal verification to meet our requirements, record keeping and liaison with the External Examiner. The Programme Leader registers with Pearson annually and acts as an assessor, supports the rest of the assessment team, makes sure they have the information they need about our assessment requirements, and organises training, making use of our guidance and support materials.
- **Internal Verifiers (IVs)** oversee all assessment activity in consultation with the Programme Leader. They check that assignments and assessment decisions are valid and that they meet our requirements. IVs will be standardised by working with the Programme Leader. Normally, IVs are also assessors, but they do not verify their own assessments.
- **Assessors** set or use assignments to assess students to national standards. Before taking any assessment decisions, assessors participate in standardisation activities led by the Programme Leader. They work with the Programme Leader and IVs to ensure that the assessment is planned and carried out in line with our requirements.
- Your **External Examiner (EE)** will sample student work across assessors. Your EE will also want to see evidence of informal verification of assignments and assessment decisions.

6.1.4 Effective organisation

Internal assessment needs to be well organised so that student progress can be tracked and so that we can monitor that assessment is being carried out in line with national standards. We support you in this through, for example, providing training materials and sample documentation. Our online HN Global service can also help support you in planning and record keeping.

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

6.1.5 Student preparation

To ensure that you provide effective assessment for your students, you need to make sure that they understand their responsibilities for assessment and the centre's arrangements. From induction onwards you will want to ensure that students are motivated to work consistently and independently to achieve the requirements of the qualifications. They need to understand how assignments are used, the importance of meeting assignment deadlines, and that all the work submitted for assessment must be their own.

You will need to give your students a guide that explains:

- How assignments are used for assessment
- How assignments relate to the teaching programme
- How students should use and reference source materials, including what would constitute plagiarism.

The guide should also set out your centre's approach to operating assessments, such as how students must submit assignments/work and the consequences of submitting late work and the procedure for requesting extensions for mitigating circumstances.

6.2 Setting effective assessments

6.2.1 Setting the number and structure of assessments

In setting your assessments you need to work with the structure of assessments shown in the relevant section of a unit. This shows the learning aims and outcomes and the criteria that you are expected to follow.

Pearson provide online Example Assessment Briefs (EABs) for each unit to support you in developing and designing your own assessments.

In designing your own Assignment Briefs you should bear in mind the following points:

- The number of assignments for a unit must not exceed the number of Learning Outcomes listed in the unit descriptor. However, you may choose to combine assignments, either to cover a number of Learning Outcomes or to create a single assignment for the entire unit.
- You may also choose to combine all or parts of different units into single assignments, provided that all units and all their associated Learning Outcomes are fully addressed in the programme overall. If you choose to take this approach you need to make sure that students are fully prepared, so that they can provide all the required evidence for assessment, and that you are able to track achievement in assessment records.

- A Learning Outcome must always be assessed as a whole and must not be split into two or more elements.
- The assignment must be targeted to the Learning Outcomes but the Learning Outcomes and their associated criteria are not tasks in themselves. Criteria are expressed in terms of the outcome shown in the evidence.

You do not have to follow the order of the Learning Outcomes of a unit in setting assignments, but later Learning Outcomes often require students to apply the content of earlier Learning Outcomes, and they may require students to draw their learning together.

Assignments must be structured to allow students to demonstrate the full range of achievement at all grade levels. Students need to be treated fairly by being given the opportunity to achieve a higher grade, if they have the ability.

As assignments provide a final assessment, they will draw on the specified range of teaching content for the Learning Outcomes. **The specified unit content must be taught/delivered.** The evidence for assessment need not cover every aspect of the teaching content, as students will normally be given particular examples, case studies or contexts in their assignments. For example, if a student is carrying out one practical performance, or an investigation of one organisation, then they will address all the relevant range of content that applies in that instance.

6.2.2 Providing an Assignment Brief

A good Assignment Brief is one that, through providing challenging and authentic sector/work-related tasks, motivates students to provide appropriate evidence of what they have learnt.

An Assignment Brief should have:

- A vocational scenario: this could be a simple situation or a full, detailed set of vocational requirements that motivates the student to apply their learning through the assignment.
- Clear instructions to the student about what they are required to do, normally set out through a series of tasks.
- An audience or purpose for which the evidence is being provided.
- An explanation of how the assignment relates to the unit(s) being assessed.

6.2.3 Forms of evidence

BTEC Higher Nationals have always allowed for a variety of forms of assessment evidence to be used, provided they are suited to the type of Learning Outcomes being assessed. For many units, the practical demonstration of skills is necessary and, for others, students will need to carry out their own research and analysis, working independently or as part of a team.

The Example Assessment Briefs give you information on what would be suitable forms of evidence to give students the opportunity to apply a range of employability or transferable skills. Centres may choose to use different suitable forms of evidence to those proposed. Overall, students should be assessed using varied forms of evidence.

These are some of the main types of assessment:

- Written reports, essays
- In-class tests
- Examinations
- Creation of financial documents
- Creation of planning documents
- Work-based projects
- Academic posters, displays, leaflets
- PowerPoint (or similar) presentations
- Recordings of interviews/role plays
- Working logbooks, reflective journals
- Presentations with Assessor questioning
- Time-constrained assessment.

(Full definitions of different types of assessment are given in *Appendix 4*.)

The form(s) of evidence selected must:

- Allow the student to provide all the evidence required for the Learning Outcomes and the associated assessment criteria at all grade levels.
- Allow the student to produce evidence that is their own independent work.
- Allow a verifier to independently reassess the student to check the Assessor's decisions.

For example, when you are using performance evidence, you need to think about how supporting evidence can be captured through recordings, photographs or task sheets.

Centres need to take particular care that students are enabled to produce independent work. For example, if students are asked to use real examples, then best practice would be to encourage them to use examples of their own or to give the group a number of examples that can be used in varied combinations.

6.3 Making valid assessment decisions

6.3.1 Authenticity of student work

An assessor must assess only student work that is authentic, i.e. the student's own independent work. Students must authenticate the evidence that they provide for assessment through signing a declaration stating that it is their own work. A student declaration must state that:

- Evidence submitted for the assignment is the student's own
- The student understands that false declaration is a form of malpractice.

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

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

During assessment an assessor may suspect that some or all of the evidence from a student is not authentic. The assessor must then take appropriate action using the centre's policies for malpractice. (See *section 3.7* in this Programme Specification for further information.)

6.3.2 Making assessment decisions using criteria

Assessors make judgements using the criteria. The evidence from a student can be judged using all the relevant criteria at the same time. The assessor needs to make a judgement against each criterion that evidence is present and sufficiently comprehensive. For example, the inclusion of a concluding section may be insufficient to satisfy a criterion requiring 'evaluation'.

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

- The explanation of key terms in *Appendix 3* of this document
- Examples of moderated assessed work
- Your Programme Leader and assessment team's collective experience.

6.3.3 Dealing with late completion of assignments

Students must have a clear understanding of the centre's policy on completing assignments by the deadlines that you give them. Students may be given authorised extensions for legitimate reasons, such as illness, at the time of submission, in line with your centre policies (see also *Section 3.6 "Administrative arrangements for internal assessment"*).

For assessment to be fair, it is important that students are all assessed in the same way and that some students are not advantaged by having additional time or the opportunity to learn from others. Centres should develop and publish their own regulations on late submission; and, this should make clear the relationship between late submission and the centre's mitigating circumstances policy.

Centres may apply a penalty to assignments that are submitted beyond the published deadline. However, if a late submission is accepted, then the assignment should be assessed normally, when it is submitted, using the relevant assessment criteria; with any penalty or cap applied after the assessment. Where the result of assessment may be capped, due to late submission of the assignment, the student should be given an indication of their uncapped mark; in order to recognise the learning that has been achieved, and assessment feedback should be provided in relation to the uncapped achievement.

As with all assessment results, both the uncapped and capped marks should be recorded and ratified by an appropriate assessment board; taking into account any mitigating circumstances that may have been submitted.

6.3.4 Issuing assessment decisions and feedback

Once the assessment team has completed the assessment process for an assignment, the outcome is a formal assessment decision. This is recorded formally and reported to students. The information given to the student:

- Must show the formal decision and how it has been reached, indicating how or where criteria have been met.
- May show why attainment against criteria has not been demonstrated.
- Must not provide feedback on how to improve evidence but how to improve in the future.

6.3.4 Resubmission opportunity

An assignment provides the final assessment for the relevant learning outcomes and is normally a final assessment decision. A student who, for the first assessment opportunity, has failed to achieve a Pass for that unit specification **shall be expected to undertake a reassessment**.

- Only one opportunity for reassessment of the unit will be permitted.
- Reassessment for course work, project- or portfolio-based assessments shall normally involve the reworking of the original task.
- For examinations, reassessment shall involve completion of a new task.

- A student who undertakes a reassessment will have their grade capped at a Pass for that unit.
- A student will not be entitled to be reassessed in any component of assessment for which a Pass grade or higher has already been awarded.

6.3.5 Repeat Units

A student who, for the first assessment opportunity and resubmission opportunity, still failed to achieve a Pass for that unit specification can:

- At Centre discretion and Assessment Board, decisions can be made to permit a repeat of a unit.
- The student must study the unit again with full attendance and payment of the unit fee.
- The overall unit grade for a successfully completed repeat unit is capped at a Pass for that unit.
- Units can only be repeated once.

6.3.6 Assessment Boards

Each centre is expected by Pearson to hold Assessment Boards for all of its BTEC Higher National programmes. The main purpose of an Assessment Board is to make recommendations on:

- The grades achieved by students on the individual units
- Extenuating circumstances
- Cases of cheating and plagiarism
- Progression of students on to the next stage of the programme
- The awards to be made to students
- Referrals and deferrals.

Assessment Boards may also monitor academic standards. The main boards are normally held at the end of the session, although if your centre operates on a semester system there may be (intermediate) boards at the end of the first semester. There may also be separate boards to deal with referrals.

Where a centre does not currently have such a process then the External Examiner (EE) should discuss this with the Quality Nominee and Programme Leader, stressing the requirement for Assessment Boards by both Pearson and QAA and that Assessment Board reports and minutes provide valuable evidence for QAA's Review of College Higher Education process.

6.4 Planning and record keeping

For internal processes to be effective, an assessment team needs to be well organised and keep effective records. The centre will also work closely with us so that we can quality assure that national standards are being satisfied. This process gives stakeholders confidence in the assessment approach.

The Programme Leader must have an assessment plan. When producing a plan the assessment team will wish to consider:

- The time required for training and standardisation of the assessment team.
- The time available to undertake teaching and carrying out of assessment, taking account of when students may complete external assessments and when quality assurance will take place.
- The completion dates for different assignments.
- Who is acting as Internal Verifier (IV) for each assignment and the date by which the assignment needs to be verified.
- Setting an approach to sampling assessor decisions through internal verification that covers all assignments, assessors and a range of students.
- How to manage the assessment and verification of students' work, so that they can be given formal decisions promptly.
- How resubmission opportunities can be scheduled.

The Programme Leader will also maintain records of assessment undertaken. The key records are:

- Verification of assignment briefs
- Student authentication declarations
- Assessor decisions on assignments, with feedback given to students
- Verification of assessment decisions.

Examples of records and further information are available in the Pearson Quality Assurance Handbook available in the support section of our website (<http://qualifications.pearson.com>).

6.5 Calculation of the final qualification grade

6.5.1 Conditions for the Award

Conditions for the Award of the HND

To achieve a Pearson BTEC 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;
- achieved at least a Pass in 105 credits at Level 4.

Conditions for the award of the HNC

To achieve a Pearson BTEC Higher National Certificate qualification a student must have:

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

6.5.2 Compensation Provisions

Compensation Provisions for the HND

Students can still be awarded an HND if they have attempted but not achieved a minimum of a Pass in one of the 15 credit units completed at Level 4 and similarly if they have attempted but not achieved a Pass in one of the 15 credit units at Level 5. However they must complete and pass the remaining units for an HNC or HND as per the unit rules of combination of the required qualification.

Compensation Provisions HNC

Students can still be awarded an HNC if they have attempted but not achieved a Pass in one of the 15 credit units completed, but they have completed and passed the remaining units.

6.5.3 Calculation of the overall qualification grade

The calculation of the **overall qualification grade** is based on the student's performance in all units. Students are awarded a Pass, Merit or Distinction qualification grade, using the points gained through all 120 credits, at Level 4 for the HNC or Level 5 for the HND, based on unit achievement. The overall qualification grade is calculated in the same way for the HNC and for the HND.

All units in valid combination must have been attempted for each qualification. The conditions of award and the compensation provisions will apply as outlined above.

All 120 credits count in calculating the grade (at each level, as applicable). The overall qualification grade for the HNC is calculated based on student performance in Level 4 units only and the HND will be calculated based on student performance in Level 5 units only.

Units that have been attempted but not achieved, and subsequently granted compensation, will appear as 'Unclassified', i.e. a 'U' grade, on the student's Notification of Performance, that is issued with the student certificate.

Points per credit

Grade	Points
Pass	4
Merit	6
Distinction	8

Point boundaries

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

6.5.4 Modelled student outcomes

Pearson BTEC Level 4 Higher National Certificate

			STUDENT 1			STUDENT 2		STUDENT 3		STUDENT 4		STUDENT 5	
	Credits	Level	Grade point	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points
Mand 1	15	4	4	P	60	P	60	P	60	D	120	D	120
Mand 2	15	4	4	P	60	P	60	P	60	D	120	M	90
Mand 3	15	4	4	P	60	P	60	P	60	D	120	M	90
Mand 4	15	4	4	P	60	P	60	M	90	M	90	M	90
Mand 5	15	4	6	M	90	P	60	M	90	M	90	M	90
Mand 6	15	4	6	M	90	P	60	M	90	M	90	M	90
Opt 1	15	4	6	M	90	M	90	D	120	D	120	D	120
Opt 2	15	4	6	M	90	M	90	D	120	D	120	D	120
TOTAL	120				600		540		690		870		810
GRADE					M		P		M		D		M

Pearson BTEC Level 5 Higher National Diploma

			STUDENT 1			STUDENT 2		STUDENT 3		STUDENT 4		STUDENT 5	
	Credits	Level	Grade point	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points	Grade	Unit points
Mand 1	15	4	0	P	0	P	0	P	0	D	0	P	0
Mand 2	15	4	0	P	0	P	0	P	0	D	0	M	0
Mand 3	15	4	0	P	0	P	0	P	0	D	0	M	0
Mand 4	15	4	0	P	0	P	0	M	0	M	0	M	0
Mand 5	15	4	0	M	0	P	0	M	0	M	0	P	0
Mand 6	15	4	0	M	0	P	0	M	0	D	0	U	0
Opt 1	15	4	0	M	0	P	0	D	0	D	0	D	0
Opt 2	15	4	0	M	0	P	0	D	0	D	0	D	0
Mand 7	30	5	6	M	180	M	180	M	180	P	120	D	240
Mand 8	15	5	6	M	90	M	90	M	90	P	60	D	120
Opt 3	15	5	6	M	90	M	90	D	120	P	60	D	120
Opt 4	15	5	6	M	90	P	60	D	120	P	60	D	120
Opt 5	15	5	6	M	90	P	60	D	120	M	90	M	90
Opt 6	15	5	6	M	90	P	60	M	90	M	90	P	60
Opt 7	15	5	6	M	90	P	60	M	90	M	90	M	90
TOTAL	240				720		600		810		570		840
GRADE					M		M		M		P		D

Mandatory (Mand)

Optional (Opt)

7 Quality assurance

Pearson's quality assurance system for all Pearson BTEC Higher National programmes is benchmarked to Level 4 and Level 5 on the Quality Assurance Agency (QAA) Framework for Higher Education Qualifications (FHEQ). This will ensure that centres have effective quality assurance processes to review programme delivery. It will also ensure that the outcomes of assessment are to national standards.

The quality assurance process for centres offering Pearson BTEC Higher National programmes comprise five key components:

- 1 The approval process
- 2 Monitoring of internal centre systems
- 3 Independent assessment review
- 4 Annual programme monitoring report
- 5 Annual student survey

7.1 The approval process

Centres new to the delivery of Pearson programmes will be required to seek approval initially through the existing centre approval process and then through the programme approval process. Programme approval for new centres can be considered in one of two ways:

- Desk-based approval review
- Review and approval visit to the centre.

Prior to approval being given, centres will be required to submit evidence to demonstrate that they:

- Have the human and physical resources required for effective delivery and assessment.
- Understand the implications for independent assessment and agree to abide by these.
- Have a robust internal assessment system supported by 'fit for purpose' assessment documentation.
- Have a system to internally verify assessment decisions, to ensure standardised assessment decisions are made across all assessors and sites.

Applications for approval must be supported by the head of the centre (Principal or Chief Executive, etc.) and include a declaration that the centre will operate the programmes strictly, as approved and in line with Pearson requirements.

Centres seeking to renew their programme approval upon expiry of their current approval period may be eligible for the Automatic Approval process, subject to the centre meeting the eligibility criteria set out by Pearson.

Regardless of the type of centre, Pearson reserves the right to withdraw either qualification or centre approval when it deems there is an irreversible breakdown in the centre's ability either to quality assure its programme delivery or its assessment standards.

7.2 Monitoring of internal centre systems

Centres will be required to demonstrate on-going fulfilment of the centre approval criteria over time and across all Higher National programmes. The process that assures this is external examination, which is undertaken by External Examiners. Centres will be given the opportunity to present evidence of the on-going suitability and deployment of their systems to carry out the required functions. This includes the consistent application of policies affecting student registrations, appeals, effective internal examination and standardisation processes. Where appropriate, centres may present evidence of their operation within a recognised code of practice, such as that of the Quality Assurance Agency for Higher Education. Pearson reserves the right to confirm independently that these arrangements are operating to Pearson's standards.

Pearson will affirm, or not, the on-going effectiveness of such systems. Where system failures are identified, sanctions (appropriate to the nature of the problem) will be applied, in order to assist the centre in correcting the problem.

7.3 Independent assessment review

The internal assessment outcomes reached for all Pearson BTEC Higher National programmes benchmarked to Level 4 and Level 5 of the Quality Assurance Agency (QAA) Framework for Higher Education Qualifications (FHEQ), are subject to a visit from a Pearson appointed External Examiner. The outcomes of this process will be:

- To confirm that internal assessment is to national standards and allow certification, **or**
- To make recommendations to improve the quality of assessment outcomes before certification is released, **or**
- To make recommendations about the centre's ability to continue to be approved for the Pearson BTEC Higher National qualifications in question.

7.4 Annual Programme Monitoring Report (APMR)

The APMR is a written annual review form that provides opportunity for centres to analyse and reflect on the most recent teaching year. By working in collaboration with centres, the information can be used by Pearson to further enhance the quality assurance of the Pearson BTEC Higher National programmes.

7.5 Annual student survey

Pearson will conduct an annual survey of Pearson BTEC Higher National students. The purpose of the survey is to enable Pearson to evaluate the student experience as part of the quality assurance process, by engaging with students studying on these programmes.

7.6 Centre and qualification approval

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

Centres must have appropriate physical resources (for example equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualifications.

- Staff involved in the assessment process must have relevant expertise and/or occupational experience.
- There must be systems in place to ensure continuing professional development for staff delivering the qualification.
- Centres must have in place appropriate health and safety policies relating to the use of equipment by staff and students.
- Centres must deliver the qualification in accordance with current equality legislation.
- Centres should refer to the individual unit descriptors to check for any specific resources required.
- The result, we believe, are qualifications that will meet the needs and expectations of students worldwide.

7.7 Continuing quality assurance and standards verification

We produce annually the latest version of the Pearson Quality Assurance Handbook available in the support section of our website (<http://qualifications.pearson.com>). It contains detailed guidance on the quality processes required to underpin robust assessment and internal verification.

The key principles of quality assurance are that:

- A centre delivering Pearson BTEC Higher National programmes must be an approved centre, and must have approval for the programmes or groups of programmes that it is delivering.
- The centre agrees, as part of gaining approval, to abide by specific terms and conditions around the effective delivery and quality assurance of assessment; it must abide by these conditions throughout the period of delivery.

- Pearson makes available to approved centres a range of materials and opportunities through the assessment checking service. This is intended to exemplify the processes required for effective assessment and provide examples of effective standards. Approved centres must use the materials and services to ensure that all staff delivering BTEC qualifications keep up to date with the guidance on assessment.
- An approved centre must follow agreed protocols for standardisation of assessors and verifiers, for the planning, monitoring and recording of assessment processes, and for dealing with special circumstances, appeals and malpractice.

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

The methods we use to do this for BTEC Higher Nationals include:

- Making sure that all centres complete appropriate declarations at the time of approval
- Undertaking approval visits to centres
- Making sure that centres have effective teams of assessors and verifiers who are trained to undertake assessment
- Assessment sampling and verification through requested samples of assessments, completed assessed student work and associated documentation
- An overarching review and assessment of a centre's strategy for assessing and quality-assuring its BTEC programmes.

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

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

8 Recognition of Prior Learning and attainment

Recognition of Prior Learning (RPL) is a method of assessment (leading to the award of credit) that considers whether students can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess, and so do not need to develop through a course of learning.

Pearson encourages centres to recognise students' previous achievements and experiences whether at work, home or at leisure, as well as in the classroom. RPL provides a route for the recognition of the achievements resulting from continuous learning. RPL enables recognition of achievement from a range of activities using any valid assessment methodology. Provided that the assessment requirements of a given unit or qualification have been met, the use of RPL is acceptable for accrediting a unit, units or a whole qualification. Evidence of learning must be valid and reliable.

For full guidance on RPL please refer to the *Recognition of Prior Learning* policy document available in the support section of our website (<https://qualifications.pearson.com>).

9 Equality and diversity

Equality and fairness are central to our work. The design of these qualifications embeds consideration of equality and diversity as set out in the qualification regulators' General Conditions of Recognition. Promoting equality and diversity involves treating everyone with equal dignity and worth, while also raising aspirations and supporting achievement for people with diverse requirements, entitlements and backgrounds. An inclusive environment for learning anticipates the varied requirements of students, and aims to ensure that all students have equal access to educational opportunities. Equality of opportunity involves enabling access for people who have differing individual requirements as well as eliminating arbitrary and unnecessary barriers to learning. In addition, students with and without disabilities are offered learning opportunities that are equally accessible to them, by means of inclusive qualification design.

Pearson's equality policy requires all students to have equal opportunity to access our qualifications and assessments. It also requires our qualifications to be 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 in legislation) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to students who do not share that characteristic.
- All students achieve the recognition they deserve from undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.
- Pearson's policy regarding access to its qualifications is that:
- They should be available to everyone who is capable of reaching the required standards
- They should be free from any barriers that restrict access and progression
- There should be equal opportunities for all those wishing to access the qualifications.

Centres are required to recruit students to Higher National qualifications with integrity. This will include ensuring that applicants have appropriate information and advice about the qualifications, and that the qualification will meet their needs. Centres will need to review the entry profile of qualifications and/or experience held by applicants, considering whether this profile shows an ability to progress to a higher level qualification. Centres should take appropriate steps to assess each applicant's potential and make a professional judgement about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the student within the centre during their programme of study and any specific support that might be necessary to allow

the student to access the assessment for the qualification. Centres should consult our policy documents on students with particular requirements.

Access to qualifications for students with disabilities or specific needs

Students taking a qualification may be assessed in a recognised regional sign language, where it is permitted for the purpose of reasonable adjustments. Further information on access arrangements can be found in the Joint Council for Qualifications (JCQ) document *Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational Qualifications*. Details on how to make adjustments for students with protected characteristics are given in the document *Pearson Supplementary Guidance for Reasonable Adjustment and Special Consideration in Vocational Internally Assessed Units*. See the support section of our website for both documents (<http://qualifications.pearson.com/>).

10 Pearson BTEC Higher Nationals Animal Management Units

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:

- 1 Define causal pathogens and factors that can influence animal health and disease
- 2 Discuss the concepts of animal health and disease, and methods of disease prevention
- 3 Assess physiological, behavioural and physical measures of animal welfare
- 4 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.

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		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
P2 Identify an infectious and contagious disease for a named animal species			
LO2 Discuss the concepts of animal health and disease, and methods of disease prevention			
P3 Describe signs of health across three animal species		M2 Review three methods of disease prevention in animals	D2 Produce a management plan to prevent disease for a named animal species
P4 Outline common signs of disease in animals			
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		M3 Analyse the impact of external factors on animal welfare assessment	D3 Evaluate the importance of assessing animal welfare
P6 Describe how physiological, behavioural and physical measures are used within animal welfare assessment			

Pass	Merit	Distinction
LO4 Evaluate changes to animal management systems to enhance animal welfare		D4 Determine what effect the proposed changes will have on 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	

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.
- COUNBE, K. (2012) *Equine Veterinary Nursing*. 2nd edn. 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) *The Complete Textbook of Animal Health and Welfare*. Philadelphia: Saunders/Elsevier

Web

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| www.defra.gov.uk | Department for Food and Rural Affairs
(General reference) |
| www.oie.int | 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 5: Animal Husbandry

Unit 10: Animal Nursing

Unit 12: Horse Husbandry

Unit 13: Management of Equine Facilities

Unit 15: Animal Collection Management

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 business, 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, 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:

- 1 Explain the different types, size and scope of land-based organisations
- 2 Demonstrate the interrelationship of the various functions within a land-based organisation and how they link to organisational structure
- 3 Use contemporary examples to demonstrate both the positive and negative influence/impact the macro environment has on land-based business operations
- 4 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, finance, human resource management and operations within an organisational context and the 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 business.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explain the different types, size and scope of land-based organisations			LO1 LO2 D1 Provide a critical analysis of the complexities of different types of business structures and the interrelationships of the different organisational functions
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	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		
LO2 Demonstrate the interrelationship of the various functions within a land-based organisation and how they link to organisational structure			
P3 Explain the relationship between different organisational functions and how they link to organisational objectives and structure	M2 Analyse the advantages and disadvantages of interrelationships between organisational functions and the impact that can have upon organisational structure		
LO3 Use contemporary examples to demonstrate both the positive and negative influence/impact the macro environment has on land-based business operations			LO3 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		

Pass	Merit	Distinction
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 edn. London: Prentice Hall.

PALMER, A. and HARTLEY, B. (2011) *The Business Environment*. 7th edn. Maidenhead: McGraw-Hill.

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

WORTHINGTON, I. and BRITTON, C. (2014) *The Business Environment*. 7th edn. Harlow: Pearson.

Links

This unit links to the following related units:

Unit 9: Veterinary Practice Management

Unit 16: Human Resource Management

Unit 17: Marketing Essentials

Unit 21: Management Accounting

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 which 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:

- 1 Establish project aims, objectives and timeframes based on the chosen theme
- 2 Conduct small-scale research, information gathering and data collection to generate knowledge to support the project
- 3 Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis
- 4 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

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 which 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 focusing on personal development and the research journey in a critical and objective way.

Generalisation:

Many studies result in generalised findings. Research which has its basis in 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

Pass	Merit	Distinction
LO1 Establish project aims, objectives and timeframes based on the chosen theme		LO1 LO2 D1 Critically evaluate the project management process and appropriate research methodologies applied
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	M1 Produce a comprehensive project management plan, milestone schedule and project schedule for monitoring and completing the aims and objectives of the project	
LO2 Conduct small-scale research, information gathering and data collection to generate knowledge to support the project		
P4 Carry out small-scale research by applying qualitative and quantitative research methods appropriate for meeting project aims and objectives	M2 Evaluate the accuracy and reliability of different research methods applied	
LO3 Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis		LO3 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	

Pass	Merit	Distinction
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 edn. London: SAGE.

SAUNDERS, M., LEWIS, P. and THORNHILL, A. (2012) *Research Methods for Business Students*. 6th edn. Harlow: Pearson.

Links

This unit links to the following related units:

Unit 24: Research Project (Pearson-set)

Unit 4: Animal Behaviour in Society

Unit code	J/616/7831
Unit type	Core
Unit level	4
Credit value	15

Introduction

Animals are utilised in a diverse range of roles in human society and animal management practitioners undertake a similarly diverse range of roles, from managing commercial livestock, to coaching animals for sport performance, and effectively caring for companion animals.

Having an understanding of the behaviour of animals is integral to their effective management. Animals can carry out behaviours which have utility for humans and humans have the ability to modify animals' behaviours when necessary. Monitoring and reporting animal behaviours is a crucially important method of assessing animal welfare in captivity.

Through studying this unit, students will gain insight into the scientific methodology used to observe and assess animal behaviour. Students will be able to conduct their own observations and reach conclusions about animals' behaviour, making recommendations for modifying/managing behaviours. The unit will also cover the application of behaviour science to the management of animals in a variety of contexts.

There are many sectors of the animal industry where having skills in interpreting and managing animal behaviour will be important. Upon completion of this unit, students will possess the skills to be effective in a variety of roles including animal training, rehabilitation and welfare assessment. Competently measuring and assessing behaviour will also have value in studying and managing wild animals.

Learning Outcomes

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

- 1 Explain different fields of study within animal behaviour science
- 2 Demonstrate ability in conducting animal behaviour observations and assessments
- 3 Apply principles of animal behaviour to the management of animals
- 4 Describe the roles and functions of animals in human society in terms of their behaviour.

Essential Content

LO1 Explain different fields of study within animal behaviour science

Ethology and the science of animal behaviour:

History of human study of animal behaviour

Key proponents and theorists in behaviour science.

Cognition:

Memory

Intelligence and consciousness

Associative learning: classical and operant conditioning

Non-associative learning: habituation and sensitisation.

Physiological basis of behaviour:

The endocrine system

The nervous system

Genetics and instinct

Senses: stimulus-response.

Behavioural ecology:

Evolutionary basis for behaviour

Intra/interspecific behaviours in the wild.

LO2 Demonstrate ability in conducting animal behaviour observations and assessments

The scientific method:

Experimental design

Hypothesis

Report writing.

Construction and implementation of ethograms

Sampling techniques:

Continuous

Instantaneous

Ad libitum

Focal studies

Group scanning

Zero-one sampling.

Data analysis:

Statistical and graphical analysis

Qualitative versus quantitative approaches.

Behaviour assessment:

Definition and identification of abnormal behaviour patterns. Behavioural indicators of welfare.

LO3 Apply principles of animal behaviour to the management of animals

Contexts for managing animal behaviour:

Public exhibition

Rehabilitation/rehoming

Training for performance

Management of individuals

Codes of practice

Regulations.

Interactions with animals:

Handling and restraint

Codes of practice

Responding to behaviour

Identifying and modifying abnormal/undesirable behaviour. Behavioural indicators for welfare

Enrichment

Neuropsychopharmacology.

Applications of learning theories:

Conditioning

Reinforcement techniques and schedules

Training regimes.

LO4 Describe the roles and functions of animals in human society in terms of their behaviour.

Comparing wild and domestic behaviours:

Social patterns

Feeding behaviour

Activity patterns

Reproductive behaviour.

Behaviour characteristics of animals in society:

Artificial selection

Development/modification of behaviours

Sociality

Docility and aggression

Hierarchies and social structures.

Historical developments of animal roles:

Commercial production

Working roles

Supportive/therapeutic roles

Welfare implications.

Ethics:

Comparative analysis of animal roles.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explain different fields of study within animal behaviour science			
P1 Compare different fields within animal behaviour – cognition, learning, physiology, ecology	M1 Analyse animal behaviour patterns using an appropriate range of different scientific approaches		D1 Critically analyse animal behaviour patterns using an appropriate range of different scientific approaches, drawing conclusions on the relevance of fields of study in explaining the behaviour's origins
LO2 Demonstrate ability in conducting animal behaviour observations and assessments			
P2 Perform behaviour observations, utilising appropriate sampling and recording techniques for data collection P3 Analyse behavioural data, drawing conclusions about animals' behaviour	M2 Evaluate the causative factors of observed behaviours		LO2 LO3 D2 Plan and implement an appropriate behaviour modification programme for an animal, evaluating the success of observable changes in the animal's behaviour patterns
LO3 Apply principles of animal behaviour to the management of animals			
P4 Explain appropriate techniques for changing animals' behaviour P5 Produce a behaviour management plan based on relevant theoretical principles	M3 Implement a behaviour management plan, evaluating the significance of behaviour changes		
LO4 Describe the roles and functions of animals in human society in terms of their behaviour			
P6 Explain the development of animals' roles in human society P7 Describe the impact of animals' behavioural characteristics on their roles in society	M4 Evaluate the implication for animals' welfare in working roles		D3 Critically examine the historical and contemporary human manipulation of animal behaviour

Recommended Resources

Textbooks

ALCOCK, J. (2009) *Animal Behaviour: An Evolutionary Approach*. 9th edn. Sunderland, MA: Sinauer Associates.

ANDREWS, K. (2014) *The Animal Mind: An Introduction to the Philosophy of Animal Cognition*. Abingdon: Routledge.

APPLEBY, M. (2016) *Dilemmas in Animal Welfare*. Wallingford: CABI Publishing.

ENNOS, R. (2012) *Statistical and Data Handling Skills in Biology*. 3rd edn. Harlow: Prentice-Hall.

PEARCE, J.M. (2008) *Animal Learning and Cognition: An Introduction*. 3rd edn. Hove: Psychology Press.

SIMMONS, P. and YOUNG, D. (2010) *Nerve Cells and Animal Behaviour*. 3rd edn. Cambridge: Cambridge University Press.

UDELL, M. and WYNNE, C. (2013) *Animal Cognition: Evolution, Behaviour and Cognition*. 2nd edn. Basingstoke: Palgrave Macmillan.

Web

iaabc.org	International Association of Animal Behaviour Consultants (General reference)
www.oie.int	World Organisation for Animal Health (General reference)
www.omicsonline.org	OMICS Publishing Database of open access scientific journals (Research)

Essential requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 15: Animal Collection Management

Unit 25: Anthrozoology

Unit 26: Evolution and Adaptations

Unit 5: Animal Husbandry

Unit code	L/616/7832
Unit type	Core
Unit level	4
Credit value	15

Introduction

The aim of this unit is to provide students with essential underpinning knowledge and practical experience in animal husbandry and management techniques. This is essential for the development of sector-specific and transferable skills.

The unit promotes keeping animals in an environment where the maintenance of mental and physical health, the prevention of ill health and good welfare practice is paramount.

Students will study core concepts of good husbandry practice, Health and Safety, animal management techniques and administration, as well as practical aspects of handling, accommodation, provision of feed, health and welfare, and legislative requirements relevant to animal husbandry. Assessment strategies will include assessed practical investigations, written reports and presentations.

Having completed this unit, students will be equipped with the practical skills and underpinning knowledge which 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:

- 1 Examine Health and Safety practice within animal husbandry
- 2 Demonstrate animal husbandry practices and health monitoring to industry standard
- 3 Demonstrate the management of animal accommodation
- 4 Review methods of record-keeping within animal facilities.

Essential Content

LO1 Examine Health and Safety practice within animal husbandry

Legislative considerations for Health and Safety within animal husbandry:

Health and Safety in the workplace

Regulations for management and control of hazardous substances

Reporting of injury, disease or death

Personal protective equipment

Manual handling activities.

Risk assessment:

Why carry out risk assessment, HSE

Methods of risk assessment.

Factors affecting safe handling:

When to, and when not to handle animals

Animal: species, size, temperament, age, physiological condition

Handler: experience, confidence, competence

Enclosure: access, size

Procedure: grooming, health check, veterinary consultation/treatment.

LO2 Demonstrate animal husbandry practices and health monitoring processes to industry standard

Principles of industry standard animal husbandry practice:

Relationship between environment and physiological status

Five needs.

Animal handling and restraint:

Handling techniques for a range of companion, exotic and large animals, and physiological condition

Approach methods and techniques

Capture and restraint techniques for a range of situations

Selection and correct use of PPE and handling equipment

Consideration of toxic and venomous species

Movement of animals in line with legislative guidelines
Grooming techniques.

Animal health and monitoring:

Signs of good and ill health and interpretation of these
Assessment and reporting of health status
Prophylaxis and treatment of disease
Quarantine and PETS
Barrier nursing and isolation
Euthanasia: reasons for, methods and disposal.

LO3 Demonstrate the management of animal accommodation

Animal accommodation requirements:

Codes of practice for housing (RSPCA)
Species specificity for a range of companion, exotic and large animals: size, materials, ventilation, drainage, temperature, safety and security, substrate/bedding, furnishings, and feeding and watering equipment
Provision of food and water
Enrichment of accommodation
Legislation pertaining to animal accommodation: kennels and catteries, animal boarding establishments, riding establishments, farms.

Preparation and maintenance of accommodation:

Design, preparation and maintenance of a range of accommodation: aquaria, vivaria, aviaries, small mammal cages, kennels, catteries, stables, livestock housing, paddocks, fields
Daily, weekly and monthly cleaning and maintenance: regimes, use of PPE and Health and Safety, chemicals suitable for various species
Disposal of waste and environmental impact
Appraisal of animal facilities.

LO4 Review methods of record-keeping within animal facilities.

Legislative requirements for record-keeping:

DEFRA stock identification requirements: large and farm animals, poultry, PETS
Drugs legislation and COSHH

Data protection and privacy of electronic communications regulations.

Data management:

Identification of records and data required

Methods of data gathering and retrieval (manual, computerised).

Pass	Merit	Distinction
LO1 Examine Health and Safety practice within animal husbandry		D1 Complete and analyse the overall process of risk assessment within animal husbandry Health and Safety practice
P1 Describe the legislation pertaining to Health and Safety and risk assessment within animal husbandry P2 Explain the factors affecting the safe handling of animals using relevant examples across a range of species	M1 Examine how Health and Safety considerations interact with the factors affecting safe handling within animal husbandry scenarios	
LO2 Demonstrate animal husbandry practices and health monitoring to industry standard		D2 Analyse how the principles of industry standard animal husbandry practice underpin the management of both the health and husbandry of animal species.
P3 Explain how the principles of good animal husbandry practice apply to the maintenance of the physiological welfare of given species P4 Demonstrate, for a range of species, varying situations and physiological conditions, the processes of health monitoring and reporting P5 Demonstrate, for a range of species, varying situations and physiological conditions, appropriate handling and restraint techniques	M2 Assess the practice of animal husbandry techniques undertaken	

Pass	Merit	Distinction
P6 Review the roles and practice of prevention and treatment of disease, as part of the monitoring of animal health		
LO3 Demonstrate the management of animal accommodation		D3 Critically analyse accommodation in two different animal facilities
P7 Explain the requirements for the provision and ongoing maintenance of adequate accommodation for a range of species, ensuring that enrichment of the environment is considered P8 Demonstrate the design, preparation and ongoing maintenance of a range of accommodation for a variety of species	M3 Provide a justification of the planning and design of animal accommodation in terms of codes of practice and any relevant legislation	
LO4 Review methods of record-keeping within animal facilities		D4 Provide an evaluation of a data management system used within an animal facility
P9 Review the legislation relevant to record-keeping within animal facilities. P10 Explain the methods used to gather, retrieve and interpret specified data within the animal care sector	M4 Apply an appropriate data management system to an animal collection and analyse information collected	

Recommended Resources

Textbooks

COOPER, B., MULINEAUX, E. and TURNER, L. (2011) *BSAVA Manual of Veterinary Nursing*. Gloucester: British Small Animal Veterinary Association.

HUBRECHT, R. and KIRKWOOD, J. (2010) *UFAW Handbook on the Care and Management of Laboratory and Other Research Animals*. 8th edn. Chichester: Wiley-Blackwell.

MEREDITH, A. and JOHNSON-DELANEY, C. (2010) *BSAVA Manual of Exotic Pets*. Gloucester: British Small Animal Veterinary Association.

RAITI, P. and GIRLING, S. (2004) *BSAVA Manual of Reptiles*. Gloucester: British Small Animal Veterinary Association.

WARREN, D. (2015) *Small Animal Care and Management*. 2nd edn. Ontario: Thompson Learning.

Web

www.gov.uk	UK Government Department for Environment Food & Rural Affairs (Research/General reference)
www.hse.gov.uk	Health and Safety Executive Zoonoses (Research/General reference)
worksmart.org.uk	TUC Work Smart Health (General reference)

Essential requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 14: Management of Exotic Animal Species

Unit 15: Animal Collection Management

Unit 6: Animal Anatomy and Physiology

Unit code R/616/7833

Unit level 4

Credit value 15

Introduction

Animals of any species and setting require high levels of care and attention to ensure optimal health and welfare. A person holding responsibility for this should have an established knowledge of biological functioning in an aim to understand normal biological measures, what changes may occur and the influences of these changes to the overall health of an animal.

This unit develops knowledge of the biological systems of animals, with a detailed look at functioning. It will require students to analyse the interaction of systems and how environmental factors may impact an animal's health. It is through this that students will be able to enter roles within the animal sector feeling confident to make decisions and advise others in best management practices.

The unit looks at the structure and functioning of the biological systems, and highlights the important roles they play in maintaining the life of an animal. Students will study the systems with the key themes attached: muscular and skeletal systems and how they interact with one another to create movement; lymphatic and cardiovascular systems and their involvement with the transportation of essential materials, with a detailed look at the role of blood; respiratory, digestive and urinary systems, evaluating how they interact to obtain raw materials for metabolism and excrete waste; male and female reproductive systems, reproductive stages and the management of these to influence the breeding of animal species.

On completion of the unit, students should hold sufficient knowledge on the biological systems of animals to understand how animal gait, lifestyle and management can influence animal health and normal biological functioning. They should be able to interpret information given to them by a veterinary professional, and develop improvements to how an animal is cared for in response. Students will also be able to review the management of breeding animals, and make informed choices with animal wellbeing in mind. The knowledge gained from this unit will create links between other units covering health, disease and husbandry management of animals.

Learning Outcomes

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

- 1 Determine how the skeletal and muscular systems interact with one another to provide support and create movement
- 2 Discuss how the body transports essential materials around the body to maintain life and compensates to meet demands
- 3 Describe the functioning of systems which obtain raw materials for metabolism and excrete waste to highlight the effects changes in management systems may have on animal wellbeing
- 4 Develop material to share information on animal reproductive processes and the ways that these processes can be managed for animal owners to make informed choices.

Essential Content

LO1 Determine how the skeletal and muscular systems interact with one another to provide support and create movement

Support systems:

Types of support systems: hydroskeleton, endoskeleton and exoskeleton

Bone types and functions, structure and composition of bone tissue

Bone renewal and growth

Types of joint (fibrous, cartilaginous, synovial), synarthrosis, amphiarthrosis, diarthrosis

Joint anatomy

Range of joint movement.

Movement:

Structure and composition of muscle types: skeletal, cardiac, smooth

Muscle contraction: sliding filament theory

Skeletal muscle types associated to particular movements

Tendons and ligament structure and role

Common types and sites of injury through movement.

LO2 Discuss how the body transports essential materials around the body to maintain life and compensates to meet demands

Blood:

Composition and function of blood

Function and morphology of blood cells: erythrocytes, leucocytes – neutrophils, eosinophils, basophils, lymphocytes, monocytes, macrophages

Origin of blood cells

Role of platelets and fibrinogen

Blood plasma

Environmental and management impact on blood composition: altitude, workload, diet.

Cardiovascular system:

Structure and function of the heart, origin and conduction of heartbeat, cardiac cycle, structure and function of blood vessels, circulatory pathways (pulmonary circulation, systemic circulation, coronary circulation)

Open and closed circulatory systems

Circulatory physiology, response to demand (thermoregulation, exercise, fight/flight response).

Lymphatic system:

Lymphatic vessels, formation and transportation of lymph, structure and location of lymph nodes, lymphoid tissues and organs. Conditions affecting correct functioning.

LO3 Describe the functioning of systems which obtain raw materials for metabolism and excrete waste to highlight the effects changes in management systems may have on animal wellbeing

Respiratory system:

Structure and function of the respiratory tract

Ventilation of lungs, gaseous exchange

Transport of respiratory gases

Management of respiratory diseases and disorders.

Digestive system:

Structure and functions of the organs of the digestive tract (ruminant, monogastric, hindgut fermenter)

Phases of digestion and absorption, digestive enzymes, neural and hormonal control of digestion

Functions of the liver and pancreas.

Urinary system:

Structure and functions of the kidney

Urine formation

Urine movement through the system

Osmoregulation and pH regulation.

Husbandry techniques and wellbeing:

Impact of animal management systems on the respiratory, digestive and urinary systems

Bedding/substrate use, cleaning procedures, feeding and watering systems, housing, exercise.

LO4 Develop material to share information on animal reproductive processes and the ways that these processes can be managed for animal owners to make informed choices

Reproductive system:

Structure and function of the male and female reproductive systems, oestrus, hormonal control, spermatogenesis and oogenesis

Variations between species.

Reproductive stages and management:

Sexual maturity, fertilisation, implantation/egg and shell production, embryonic development, parturition

Breeding management, natural breeding, artificial insemination, embryonic transfer, surrogacy, cloning.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Determine how the skeletal and muscular systems interact with one another to provide support and create movement			D1 Evaluate sites of weakness where the muscular and skeletal systems interact for a named animal species to influence management of the species
P1 Explain how skeletal and muscular systems function	P2 Identify the methods of interaction between the skeletal and muscular systems to provide support and create movement	M1 Explain in detail the functioning of skeletal and muscular systems to include the differences between bone and muscle types	
LO2 Discuss how the body transports essential materials around the body to maintain life and compensates to meet demands			LO2 LO3 D2 Critically review the demands placed on a named animal species through human interaction, which affects the animals' wellbeing, and identify potential improvements to care
P3 Describe the structure and function of the cardiovascular and lymphatic systems	P4 Discuss the composition of blood and how it may vary to meet demands	M2 Explain the morphology of erythrocytes and leucocytes to determine cell health through blood samples	
LO3 Describe the functioning of systems which obtain raw materials for metabolism and excrete waste to highlight the effects changes in management systems may have on animal wellbeing			
P5 Evaluate how the respiratory, digestive and urinary systems function effectively on a daily basis for a named species	P6 Describe two examples of management systems, which may affect the functioning of either the respiratory, digestive or urinary system in a named species	M3 Analyse the reasoning for management systems used, which may affect animal wellbeing	

Pass	Merit	Distinction
LO4 Develop material to share information on animal reproductive processes and the ways that these processes can be managed for animal owners to make informed choices		D3 Evaluate artificial breeding interventions to provide unbiased information for the animal owner/carer
P7 Create a means of communicating information to animal owners on the reproductive processes of a named animal species and describe how these can be managed for breeding purposes	M4 Explain in detail the events of oestrus in a named species and how this can affect behaviour traits	

Recommended Resources

Textbooks

AKERS, R.M. and DENBOW, D.B. (2013) *Anatomy & Physiology of Domestic Animals*. 2nd edn. Chichester: Wiley.

BREGA, J. (2005) *Essential Equine Studies: Book One: Anatomy and Physiology*. London: J.A. Allen.

BRITISH HORSE SOCIETY and HASTIE, P. (2012) *The BHS Veterinary Manual*. 2nd edn. Shrewsbury: Kenilworth Press.

FRANDSON R.D., WILKE, W.L. and FAILS, A.D. (2013) *Anatomy & Physiology of Farm Animals*. 7th edn. Oxford: Blackwell.

REECE, W.O. and ROWE E.W. (2017) *Functional Anatomy and Physiology of Domestic Animals*. 5th edn. Chichester: Wiley.

TORTORA, G.J and DERRICKSON, B.H. (2014) *Principles of Anatomy and Physiology*. 14th edn. Chichester: Wiley.

Web

www.khanacademy.org

Khan academy

Human Biology

(General reference)

www.onlineveterinaryanatomy.net

Online Veterinary Anatomy Museum

Whole site

(General reference/Research)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 5: Animal Husbandry

Unit 7: Animal Nutrition

Unit 12: Horse Husbandry

Unit 31: Equine Health and Disease

Unit 7: Animal Nutrition

Unit code Y/616/7834

Unit level 4

Credit value 15

Introduction

Understanding the nutritional requirements of animals is essential to be able to devise and plan diets to maintain animal health and production. This unit introduces students to the scientific basis of animal nutrition, supporting a range of careers within the animal management, agricultural and pet industries.

Students will define the macro and micronutrients which make up food, and evaluate how each constituent contributes to balanced animal nutrition and influences metabolism. They will also explore the importance of hydration and acid-base balance within homeostasis.

The dietary requirements for a range of different animal species and how these vary with life stage, health status, reproduction, production, live weight gain and activity levels will be analysed. Students will further learn how to calculate feed rations for a range of animal species and explore the relationship between diet and productivity, and behaviour.

In addition, students will conduct basic laboratory tests to analyse foodstuffs, providing them with practical skills they could use in the workplace.

Learning Outcomes

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

- 1 Describe the role of macro and micronutrients and water within animal nutrition
- 2 Analyse the dietary requirements of animals during different stages of their lives
- 3 Formulate dietary rations that meet animals' nutritional requirements
- 4 Evaluate the advantages and disadvantages of different types of diet to provide animals' nutritional and behavioural needs.

Essential Content

LO1 Describe the role of macro and micronutrients and water within animal nutrition

Key nutrients and their roles:

Macro-nutrients: carbohydrates, lipids, proteins, fibre

Micro-nutrients: vitamins, minerals

Water.

Metabolism

Hydration

Acid-base balance

Digestion, absorption and synthesis of key nutrients

Key differences between herbivores, carnivores and omnivores

LO2 Analyse the dietary requirements of animals during different stages of their lives

Nutritional requirements of a range of animal species:

Companion animals: dog, cat, small mammals

Exotics

Birds

Horses

Livestock

Captive animals

Wildlife.

Nutritional requirements of animals – life stage:

Pregnant

Lactation

Neonate

Growth

Adult

Breeding

Geriatric.

Nutritional requirements of animals – activity:

Working

Production

Disease.

Grassland management for herbivores:

Rotation

Fertilisers

Mowing

Weed control

Stocking density.

LO3 Formulate dietary rations that meet animals' nutritional requirements

Design ration formulation sheets:

Scientific rationing

Systems of rationing

Use of excel spreadsheets

Animal requirements.

Commercial diets:

Commercial manufacture of animal feeds

Legislation and labelling

Availability of foodstuffs

Nutrient analysis.

LO4 Evaluate the advantages and disadvantages of different types of diet to provide animals' nutritional and behavioural needs

Animal nutritional needs:

Effects of deficiencies and excesses of core nutrients

Impact on behaviour

Impact on health

Impact on productivity/performance/function/live weight gain

Impact on longevity

Impact on reproduction

Impact of obesity.

Treatment for deficiencies and excesses:

Inclusion of additives

Restriction/removal of certain foodstuffs.

Management of obesity:

Exercise

Diet.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Describe the role of macro and micronutrients and water within animal nutrition			
P1 Describe the role of macronutrients in animal nutrition		M1 Assess how key nutrients are absorbed or synthesised in the animal body for two animal species	D1 Appraise the role of macro and micronutrients, and water, in maintaining homeostasis and supporting metabolism
P2 Explain the role of micronutrients and water in animal nutrition			
LO2 Analyse the dietary requirements of animals during different stages of their lives			
P3 Define the key dietary requirements for named animals to support adult health		M2 Evaluate how nutritional requirements vary within gestation, reproduction and during lactation	D2 Interpret how nutritional requirements of animals vary between species and at different stages of their lives
P4 Recognise how nutritional requirements differ between the growing and geriatric animal			
LO3 Formulate dietary rations that meet animals' nutritional requirements			
P5 Design a ration formulation spreadsheet		M3 Choose suitable feedstuffs to deliver the formulated ration	D3 Justify how the ration proposed meets the nutrient and energy requirements of the selected animal
P6 Calculate an appropriate daily ration for a named animal			
LO4 Evaluate the advantages and disadvantages of different types of diet to provide animals' nutritional and behavioural needs			
P7 Describe how diet can influence animal behaviour		M4 Assess the relationship between feeding, diet and animal behaviour and production	D4 Examine the impact of dietary deficiencies and excesses on animal health, production and function, and how these can be rectified
P8 Outline advantages and disadvantages of two different diets for a named animal			

Recommended Resources

Textbooks

- BLAS, C. and WISEMAN J. (1998) *The Nutrition of the Rabbit*. New York: CABI Publishing.
- BURGER, I.H. (1996) *The Waltham Book of Companion Animal Nutrition*. Oxford: Pergamon.
- FRAPE, D. (2010) *Equine Nutrition and Feeding*. Oxford: Blackwell Science Ltd.
- HILL, J. (2003) *Nutritional Physiology of the Horse*. Nottingham: Nottingham University Press.
- LONSDALE, C. (1989) *Straights: Raw Materials for Animal Feed Compounders and Farmers*. Marlow: Chalcombe Publications.
- MCDONALD, P., EDWARDS, R.A., GREENHALGH, J.F.D. and MORGAN, C.A. (2011) *Animal Nutrition*. Harlow: Longman Scientific & Technical.
- NATIONAL RESEARCH COUNCIL (2007) *Nutrient Requirements of Horses*. Washington, DC: National Academy Press.
- NATIONAL RESEARCH COUNCIL (1995) *Nutrient Requirements of Laboratory Animals*. Washington, DC: National Academy Press.
- NATIONAL RESEARCH COUNCIL (2001) *Nutrient Requirements of Dairy Cattle*. Washington, DC: National Academy Press.
- NATIONAL RESEARCH COUNCIL (2006) *Nutrient Requirements of Dogs and Cats*. Washington, DC: National Academy Press.
- POND, W.G., CHURCH, D.C. and POND, K.R. (2005) *Basic Animal Nutrition and Feeding*. New York: Wiley.
- WILLIAMS, J.M. (2009) *The Complete Textbook of Animal Health and Welfare*. London: Elsevier.

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 5: Animal Husbandry

Unit 10: Animal Nursing

Unit 12: Horse Husbandry

Unit 15: Animal Collection Management

Unit 8: Ecological Principles

Unit code	D/616/7835
Unit level	4
Credit value	15

Introduction

This unit provides a broad introduction to the key principles of ecological processes. Ecology is a growing area of the animal management industry, with increased awareness of human impacts on the health of flora and fauna globally. Key principles of ecology form the basis for further study across the animal management industry.

The unit aims to provide a holistic approach to covering the expansive subject of ecology. Initially, fundamental mechanisms of evolution are explored, with a key focus on individual response to a range of factors. The interrelationship between species is investigated with specific populations identified. Finally, population dynamics are studied within a given context.

The nature of this unit promotes scientific and academic skill development. Upon completion of this unit, students will have the ability to analyse ecological mechanisms and apply strategies to managing specific populations, which directly contributes to the overall employability profile of students. Ecological principles directly relate to conservation, environmental and wildlife positions within the land-based sector.

Learning Outcomes

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

- 1 Explain the mechanisms and ecological implications of evolution
- 2 Describe factors impacting flora and fauna within a range of environments
- 3 Analyse the complexity of interrelationships between organisms
- 4 Assess mechanisms governing fluctuations and stability within populations.

Essential Content

LO1 Explain the mechanisms and ecological implications of evolution

Natural selection

Evolution

Adaptations

Ecological implications

Darwin

Genetic drift

Hardy-Weinberg principle.

LO2 Describe factors impacting flora and fauna within a range of environments

Biotic factors

Abiotic factors

Biogeochemical cycles

Edaphic conditions

Climate

Geographic demographics

Natural disaster.

LO3 Analyse the complexity of interrelationships between organisms

Biomes

Food webs

Mutualism

Trophic levels

Commensalism

Optimality theory.

LO4 Assess mechanisms governing fluctuations and stability within populations.

Migration

Immigration

Survivorship

Death rates

Birth rates

Food webs

Predation

Competition

Boom-bust cycles.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Explain the mechanisms and ecological implications of evolution		LO1 LO2 D1 Evaluate a given species' mechanisms of evolution in response to biotic and abiotic factors
P1 Define evolution by natural selection and provide examples of the theory in action P2 Outline how species adapt to their environment	M1 Compare the evolution of species in a variety of environments	
LO2 Describe factors impacting flora and fauna within a range of environments		
P3 Investigate the impacts of biotic and abiotic factors within given populations P4 Explain the impacts natural disaster can have on flora and fauna within a population	M2 Analyse the significance of the introduction of non-native species to a given location	
LO3 Analyse the complexity of interrelationships between organisms		LO3 LO4 D2 Analyse boom-bust cycles within a range of populations, including detail on the interdependence between all species involved
P5 Describe a range of biomes in the biosphere, citing representative species from each P6 Analyse a food web within a given biome, detailing how the removal of a single species would impact the overall demographic of the ecosystem	M3 Describe the optimality theory and evaluate the relevance of the theory	

Pass	Merit	Distinction
LO4 Assess mechanisms governing fluctuations and stability within populations		
P7 Describe the population dynamics within a given ecosystem	M4 Discuss the impacts of predation and competition within a given population	

Recommended Resources

Textbooks

BEEBY, A. and BRENNAN, A. (2003) *First Ecology: Ecological Principles and Environmental Issues*. 2nd edn. Oxford: Oxford University Press.

BOWMAN, W. D., HACKER, S. D. and MICHAEL, L. C. (2017) *Ecology*. 4th edn. Cary NC: Sinauer Publishing.

DODDS, W. and WHILES, M. (2010) *Freshwater Ecology: Concepts and Environmental Applications of Limnology (Aquatic Ecology)*. 2nd edn. Cambridge MA: Academic Press.

MOLLES, M. (2012) *Ecology: Concepts and Applications*. 6th edn. New York: McGraw-Hill Higher Education.

MOSS, B. (2017) *Ponds Small Lakes: Microorganisms and Freshwater Ecology*. 1st edn. Exeter: Pelagic Publishing.

Web

www.britishecologicalsociety.org	British Ecological Society Publication (Learning & Resources)
www.ecology.com	Ecology Energy, Humans (General reference)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 26: Evolution and Adaptations

Unit 35: Wildlife Conservation

Unit36: Ethics and Consultation

Unit 9: Veterinary Practice Management

Unit code H/616/7836

Unit level 4

Credit value 15

Introduction

Veterinary Practice Managers are essential to the successful running of the modern veterinary clinic. Veterinary practices represent small businesses, which require a manager who can manage staff, undertake marketing, understand business planning and financial management, as well as develop the practice's bond with its clients. The growing importance of this role and the need for staff to acquire business management skills to help make the practice more efficient and successful, make this unit essential for anyone wishing to pursue a career in the veterinary sector.

This unit provides students with an introduction to veterinary practice management. It covers the fundamental requirements needed to run a small business contextualised to the veterinary environment. Students will develop a broad understanding of business skills required in marketing, human resource management, financial management and physical resource management, as well as debating the ethical and legislative constraints the veterinary practice operates within.

Students will also evaluate organisational structure and the role of different members of the veterinary practice, including how they work together to promote a positive working environment. The client-veterinary bond and factors which can increase and reduce client loyalty will be discussed. In addition, there will be an overview of the wider veterinary sector and allied industries, and students will learn how to construct business plans.

The skills developed in this unit will support future careers within the veterinary profession and underpin management roles in animal-related industries.

Learning Outcomes

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

- 1 Describe the role of the Veterinary Practice Manager within the wider business team
- 2 Analyse key facets of business operations in the veterinary practice
- 3 Evaluate the management of a veterinary practice business
- 4 Design and present a business plan to develop the business of an existing veterinary practice.

Essential Content

LO1 Describe the role of the Veterinary Practice Manager within the wider business team

Business organisation and its environment:

The veterinary sector

Allied veterinary industries.

Organisational structure:

veterinary franchises and individual practices

Business legal status.

Roles and responsibilities of the veterinary team:

Practice Manager

Practical Principal

Partners

Head Nurse

Veterinary Nurses

Auxiliary nursing staff

Reception team

Team dynamics

Role of volunteers and work experience in the veterinary team

Other members of the veterinary business team.

LO2 Analyse key facets of business operations in the veterinary practice

Management and leadership theories:

Strategic analysis tools: SWOT, PESTLE, SOAR, STEEP, STEEPLE.

Introduction to human resource management:

Determining staffing requirements

Job descriptions

Contracts

Recruitment

Appraisals

Coaching and mentoring
Negotiation skills
Performance evaluation
Staff development and training
Employment law
Successful team leadership
Professional regulation and CPD requirements
Managing volunteers and work experience.

Introduction to marketing:

Strategies to support business success
Social media.

Physical resource management:

Servicing and maintenance
Safe operating procedures
Health and Safety
Risk assessment
COSHH.

Introduction to financial management:

Accounting principles
Use and evaluation of Key Performance Indicators within financial performance
Veterinary operating systems for practice expenses, stock control etc.
Cash flow strategies
Production of financial summaries.

LO3 Evaluate the management of a veterinary practice business

Veterinary business considerations:

Veterinary resource management
Safe storage of veterinary materials
Client interaction and education.

Business constraints:

Confidentiality

Veterinary ethics

Animal welfare

Working knowledge of relevant national legislation e.g. for the UK: Veterinary Surgeon's Act, Animal Welfare Act, RCVS Code of Conduct, Practice Accreditation Scheme, Veterinary Medicine Regulations

Business status

Economic constraints

Staff-related constraints

Client loyalty

Client compliance

Regional, national and international influences on business.

Common problems in veterinary business management:

Client drift

Human resource issues

Financial issues

Staff retention.

Veterinary-client relationship management:

Effective communication

Strategies to build client loyalty.

LO4 Design and present a business plan to develop the business of an existing veterinary practice

Components of a business plan:

Vision, mission and values

Market trends analysis

Financial review and forecasting

Strategic analysis of business

Organisational/staffing structure

Example business plans.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Describe the role of the Veterinary Practice Manager within the wider business team		D1 Evaluate how client relationships are managed by the Veterinary Practice Manager
P1 Produce an organisational chart for an example veterinary practice P2 Describe the roles of key personnel within the veterinary practice team	M1 Analyse the contribution of the Veterinary Practice Manager to running the veterinary practice	
LO2 Analyse key facets of business operations in the veterinary practice		D2 Construct a one-page summary of the business operation of an assigned veterinary practice
P3 Discuss the role of human and physical resource management in the veterinary practice P4 Complete a financial summary for a stated veterinary practice	M2 Describe the factors which can influence the success of marketing in the veterinary sector	
LO3 Evaluate the management of a veterinary practice business		D3 Plan valid solutions to three key factors which can commonly negatively affect the efficient and effective management of a veterinary business
P5 Analyse the human resource management, marketing and financial status of a selected veterinary practice P6 Discuss how regional and national influences impact the veterinary practice's business	M3 Appraise three key factors which can negatively affect the efficient and effective management of a veterinary business	
LO4 Design and present a business plan to develop the business of an existing veterinary practice		D4 Critically evaluate proposals outlined in the business plan
P7 Construct a business plan for an existing veterinary practice, including: strategic overview of the business, its mission, vision and values, market trends analysis, financial review and organisational review	M4 Demonstrate how business theory and strategy have informed business plan construction	

Pass	Merit	Distinction
P8 Present the business plan to an audience with the aim of seeking financial support for proposed developments		

Recommended Resources

Textbooks

- BLACKWELL, E. (2011) *How to Prepare a Business Plan*. London: Kogan Page.
- BOWER, J. (2012) *Veterinary Practice Management*. New Jersey: John Wiley & Sons.
- BRIDGE, S. and O'NEILL, K. (2008) *Understanding Enterprise: Entrepreneurship and Small Business*. Basingstoke. Basingstoke: Palgrave.
- CARTER, S. and JONES-EVANS, D. (2012) *Enterprise and Small Business*. Harlow: Prentice Hall.
- COATES, C.R. (2012) *Veterinary Practice Management*. Wallingford: CABI Publishing.
- DYSON, J. (2010) *Accounting for Non-Accounting Students*. Harlow: FT Prentice Hall.
- LEWIS, P., THORNHILL, A. and SAUNDERS, M. (2003) *Employee Relations: Understanding the Employee Relationship*. Harlow. Pearson Education Ltd.
- STOREY, D.J. (2010) *Understanding the Small Business Sector*, London: Routledge.
- STUTELY, R. (2012) *The Definitive Business Plan: The Fast Track to Intelligent Business Planning for Executives and Entrepreneurs*. London: Prentice Hall.

Web

www.vpma.co.uk Veterinary Practice Managers
Association
(General reference)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 2: Business and the Business Environment

Unit 16: Human Resource Management

Unit 17: Marketing Essentials

Unit 21: Management Accounting

Unit 10: Animal Nursing

Unit code K/616/7837

Unit level 4

Credit value 15

Introduction

This unit will provide students with the fundamental knowledge and animal nursing skills to care for patients in clinical environments within animal management facilities or veterinary practices. These skills will support careers across the animal and veterinary sectors.

Through the course of the unit, students will develop competent handling and restraint skills for dogs, cats, exotic animals and horses for health checking, clinical examination and venepuncture, as well as how to move animals between environments in a safe and effective manner. Students will develop knowledge and understanding of the signs of health and disease, enabling them to monitor and record inpatient clinical parameters to facilitate a high standard of inpatient care. Students will be able to record temperature, pulse and respiration rates for dogs, cats, exotic animals and horses.

The physical, behavioural and psychological requirements of inpatients will be discussed to enable students to provide suitable care and meet animal welfare needs through the provision of suitable accommodation, food, water and social enrichment. The principles of accurate record-keeping and their importance to ongoing patient care and monitoring will also be assessed.

Students will be able to describe normal working practices within the veterinary environment to enable them to work safely and effectively when nursing animals. The principles of disinfection and disease control will also be considered to enable students to design protocols to prevent cross-contamination between animals.

Learning Outcomes

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

- 1 Recognise signs of health and disease in dogs, cats, exotic animals and horses
- 2 Describe routine nursing care for infectious, surgical and recumbent inpatients
- 3 Appraise the different nutritional, enrichment and housing requirements of hospitalised and ill animals
- 4 Demonstrate competent and professional handling and restraint of dogs, cats, exotic animals and horses for clinical health checks and venepuncture.

Essential Content

LO1 Recognise signs of health and disease in dogs, cats, exotic animals and horses

Concepts of health and disease:

Disease transmission

Define infectious, contagious and health

Correct management of cleaning, feeding, watering, exercise and enrichment.

History taking and health checking:

Define and identify normal ranges for basal clinical parameters: temperature, pulse, respiration, heart rate, capillary refill time, blood pressure, mucous membrane colour, posture, behaviour, coat condition, weight, hydration, locomotion, food and water intake, faecal and urinary output etc

Identify abnormal parameters: behaviour, discharges, haemorrhage, pyrexia, dehydration, eating, drinking, excretions, exercise levels

Frequency of monitoring and record-keeping.

Categories, properties and examples of micro-organisms:

Viruses, bacteria, fungi, protozoa, parasites and prions.

Clinical signs of common endo- and ectoparasites of the dog, cat, exotic animals and horses

Define infection, contagion, colonisation and contamination

Identify common infectious diseases of the dog, cat, exotic animals and horses, and list clinical signs associated with these diseases:

Dog: distemper, leptospirosis, canine parvovirus, canine adenovirus, canine parainfluenza virus, bordetella bronchispetica, rabies

Cat: feline rhinotracheitis, feline calici virus, feline herpes virus, feline infectious enteritis, feline leukaemia virus, rabies

Horse: equine influenza virus, tetanus, equine herpes virus, equine viral arteritis

Exotics: salmonella, myxomatosis, viral hemorrhagic disease, E.coli.

Describe clinical signs and nursing considerations for a range of common Zoonotic diseases e.g. toxoplasmosis, leptospirosis, toxocariasis, salmonella, campylobacter, psittacosis, sarcoptes and ringworm

LO2 Describe routine nursing care for infectious, surgical and recumbent inpatients

Describe specific nursing requirements for a range of inpatients:

Surgical inpatients: pre- and post-surgery

Infectious inpatients: barrier nursing and infection control

Recumbent patients: paresis and paralysis

Young, old and immunocompromised patients.

How to construct nursing care plans

LO3 Appraise the different nutritional, enrichment and housing requirements of hospitalised and ill animals

Identify suitable accommodation requirements:

Patient factors: species, age, condition, welfare considerations, legislative requirements, monitoring, duration of stay, purpose of stay, bedding, furniture, water and food bowls

Environmental factors: heating, lighting, location, barrier/isolation, electricity, water, drainage, security, accessibility, ventilation, noise, access to external areas.

Provision of safe, secure, hygienic and appropriate housing:

Frequency and procedures for cleaning animal accommodation

Monitoring of signs of health and disease

Selection and provision of suitable diets to meet nutritional and water requirements of animals

Designing and completing inpatient records

Provision and recording of medication: fluids, tablets, injections (subcutaneous, intramuscular)

Provision of exercise and excretory opportunities.

Patient care and stimulation:

Social, grooming, enrichment opportunities, human-animal interaction.

LO4 Demonstrate competent and professional handling and restraint of dogs, cats, exotic animals and horses for clinical health checks and venepuncture

Daily work practices:

Monitoring frequency and record-keeping

Cleaning protocols: frequency, order, equipment, retaining same equipment for duration of stay.

Safe handling and movement of animals:

Ergonomics and manual handling: risks, limitations of humans, positioning of loads, weight, stability, height, experience, physical condition and good practice

Role of restraint equipment: muzzles, leads, collars, lupi, harness, dog catcher, cat bags, crush cage, cat muzzle, towels, containers for exotics and small mammals, head collars, chifney, twitch, stocks, stretches, hoists, sedation and chemical restraint etc

Safe techniques for moving loads and different animals

Provision of a safe and secure environment

Temporary accommodation types

Personal protective equipment.

Demonstrate safe handling of animals for clinical health checking and venepuncture:

Identify suitable restraint equipment

Describe restraint for blood sampling using cephalic, jugular, marginal ear vein and tail vein and which species these are appropriate for.

Identify when to inform the veterinary surgeon and nursing team regarding the status of patients

Principles of Health and Safety:

Risk assessments, monitoring clinical environments, standard operating procedures

Identification of persons and animals at risk: pregnancy, immunosuppressed, ill, old, young, open wounds

Individual and employer responsibilities to maintain a safe working environment

Reporting of injuries and accidents e.g. relevant legislation.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Recognise signs of health and disease in dogs, cats, exotic animals and horses		D1 Evaluate the importance of history-taking and accurate record-keeping when investigating animal health and disease
P1 Describe signs of health and disease in dogs, cats, exotic animals and horses, including: normal ranges for temperature, pulse, respiration, faecal and urinary output, CRT, and mucous membrane colour P2 Recognise common infectious diseases and parasites of the dog, cat, exotic animals and horses	M1 Compare and contrast how animal behaviour can change in healthy and diseased animals	
LO2 Describe routine nursing care for infectious, surgical and recumbent inpatients		D2 Evaluate how nursing requirements change with patient status (infectious, surgical, recumbency), age and health status
P3 Explain the clinical parameters that should be monitored for a range of inpatients P4 Discuss how animals' health and welfare needs are provided via good nursing care	M2 Apply the principles of good nursing care to discuss how to nurse selected case studies	
LO3 Appraise the different nutritional, enrichment and housing requirements of hospitalised and ill animals		D3 Evaluate how patients' requirements change with patient status (infectious, surgical, recumbency), age and health status
P5 Design suitable animal accommodation for inpatients	M3 Analyse the housing and nutritional requirements of specified inpatients	

Pass	Merit	Distinction
P6 Create a nursing care plan for a selected inpatient		
LO4 Demonstrate competent and professional handling and restraint of dogs, cats, exotic animals and horses for clinical health checks and venepuncture		D4 Perform a competent clinical health check including restraint for venepuncture appropriate to the species provided (this may be in the live animal or via a simulation)
P7 Explain how to handle and restrain animals for clinical health checking P8 Describe how to handle and restrain animals for venepuncture	M4 Select appropriate equipment for the handling and transportation of animals within a nursing environment	

Recommended Resources

Textbooks

ACKERMAN, N. and ASPINALL, V. (2016) *The Complete Textbook of Veterinary Nursing*. 3rd edn. London: Elsevier Health.

COOPER, B., MULLINEAUX, E. and TURNER, L. (2011) *BSAVA Textbook of Veterinary Nursing*. 5th edn. Gloucester: BSAVA.

COUMBE, K. (2012) *Equine Veterinary Nursing*. 2nd edn. Chichester: Wiley-Blackwell.

GIRLING, S.J. (2013) *Veterinary Nursing of Exotic Pets*. 2nd edn. Chichester: Wiley-Blackwell.

ORPET, H. and WELSH, P. (2010) *Handbook of Veterinary Nursing*. 2nd edn. Chichester: Wiley-Blackwell.

WILLIAMS, J.M. (2009) *The Complete Textbook of Animal Health and Welfare*. London: Elsevier.

Web

www.theveterinarynurse.com	The Veterinary Nurse Journal Journal search (Online journal articles)
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www.vetsonline.com	Vets online The Veterinary Times Journal, Veterinary Nursing Times and Veterinary Business Journal (Online journal articles)
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Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 7: Animal Nutrition

Unit 29: Advanced Patient Care

Unit 11: Clinic Design and Processes

Unit code M/616/7838

Unit level 4

Credit value 15

Introduction

Clinic design varies between different types of veterinary practice. How a veterinary practice is designed is important to promote business efficiencies and effective management.

This unit introduces students to the concepts which underpin veterinary clinic design. Key aspects of design to support veterinary care are reviewed and the ways in which these facilitate infection control and staff and patient Health and Safety are evaluated. Students will design their own veterinary practice layouts and decide which key services to include. Using the knowledge gained, students will possess the skills to appraise if veterinary clinic design is fit for purpose and will be able to make informed suggestions on how design could be improved to support business efficiencies.

Working processes that are undertaken routinely in veterinary practice will be identified, for example, patient record-keeping, radiography, drug management and the role of reception. Students will be able to describe how these areas operate and support patient care, and will learn how to assess if current working practices are suitable for the veterinary practice. Students will also be able to plan routine working schedules in veterinary practice and will develop the skills to be able to propose alternatives routines which can optimise patient care, enhance customer experiences and lead to business efficiencies.

Learning Outcomes

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

- 1 Describe the key operational areas found in different types of veterinary clinic
- 2 Appraise if veterinary clinic design is fit for purpose
- 3 Evaluate the importance of safe working practice in the veterinary environment
- 4 Outline routine working processes which occur in veterinary clinics.

Essential Content

LO1 Describe the key operational areas found in different types of veterinary clinic

Key features and role of operational areas:

Reception

Consultation rooms/areas

Waiting room

Patient accommodation

Diagnostic areas: radiography, laboratory

Dispensary

Preparation room

Operating theatre

Waste unit

Storage areas

Equine-specific areas: stables, knock down box, arena, trot up.

LO2 Appraise if veterinary clinic design is fit for purpose

Clinic types:

Small animal

Equine

Mixed

Referral centre.

Key features in design:

Size

Design materials

Layout

Movement of personnel between areas

Patient security

Infection control

Parking

Areas included support business function

Storage

Scope for expansion.

LO3 Evaluate the importance of safe working practice in the veterinary environment

Role of different members of the veterinary team:

Practice Principal

Veterinary Practice Manager

Veterinary Surgeons

Veterinary Nurses

Reception staff

Radiation Protection Advisor/Radiation Protection Supervisor

Professional regulation and CPD requirements.

Maintenance of safe working environments:

Working knowledge of relevant national legislation e.g. for the UK: Veterinary Surgeon's Act, Animal Welfare Act, RCVS Code of Conduct, Practice Accreditation Scheme, Veterinary Medicine Regulations

Health and Safety in the veterinary practice

Risk assessment

COSHH

Standard operating procedures

General risks and hazards in veterinary practice

Waste disposal: general, sharps, clinical

Infection control

Radiation control

PPE

Staff training

Daily, weekly and monthly working protocols.

LO4 **Outline routine working processes which occur in veterinary clinics.**

Infection control:

Routine cleaning protocols: order, equipment, materials, antiseptics and disinfectants, authorised personnel

Hazards in different areas of the veterinary clinic

Barrier nursing

Isolation

Daily, weekly and monthly working protocols

Staff training

Hand washing

Patient preparation for clinical and surgical procedures

Waste disposal.

Client management:

Data protection

Confidentiality

Professional code of conduct

Record-keeping

Computerised management systems.

Patient management:

Patient records

History taking

Prophylactic care

Role of nurse clinics

During the veterinary consultation

Admission and discharge

Routine monitoring: weight, vaccination, neutering, worming, flea treatments

Insurance claims.

Stock control:

Classification of veterinary goods

Stock control and rotation

Safe storage of drugs and medication

Dispensing: rules and regulations, dose calculation, labelling, authorised personnel, product classification.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Describe the key operational areas found in different types of veterinary clinic		D1 For a named operational area of the veterinary clinic, critically assess how different members of the veterinary team work together to enhance business efficiencies
P1 Explain the role of key operational areas in veterinary clinics P2 Describe the key features for different operational areas in veterinary clinics	M1 Compare and contrast differences in operational areas between small animal and equine veterinary clinics	
LO2 Appraise if veterinary clinic design is fit for purpose		D2 Evaluate how veterinary clinic design supports patient care and customer experience
P3 Produce a summary report critiquing veterinary clinic design P4 Discuss how veterinary clinic design is fit for purpose	M2 Make recommendations for how veterinary clinic design can be improved	
LO3 Evaluate the importance of safe working practice in the veterinary environment		D3 Evaluate the importance of standard operating procedures in the veterinary environment
P5 Identify relevant legislation that governs safe working in the veterinary environment P6 Explain the role of different members of the veterinary team in maintaining a safe working environment	M3 Assess how Health and Safety is maintained in different areas of the veterinary clinic	
LO4 Outline routine working processes which occur in veterinary clinics		D4 Appraise how infection control processes in the veterinary clinic prevent the spread of disease
P7 Describe how different types of veterinary goods should be stored and dispensed P8 Explain the process of client management in the veterinary clinic	M4 Analyse the different roles of the veterinary team within patient management	

Recommended Resources

Textbooks

ACKERMAN, N. and ASPINALL, V. (2016) *The Complete Textbook of Veterinary Nursing*. 3rd edn. Elsevier Health.

COOPER, B., MULLINEAUX, E. and TURNER, L. (2011) *BSAVA Textbook of Veterinary Nursing*. 5th edn. Gloucester: BSAVA.

COUMBE, K. (2012) *Equine Veterinary Nursing*. 2nd edn. Chichester: Wiley-Blackwell.

GIRLING, S.J. (2013) *Veterinary Nursing of Exotic Pets*. 2nd edn. Chichester: Wiley-Blackwell.

ORPET, H. and WELSH, P. (2010) *Handbook of Veterinary Nursing*. 2nd edn. Chichester: Wiley-Blackwell.

WILLIAMS, J.M. (2009) *The Complete Textbook of Animal Health and Welfare*. London: Elsevier.

Web

www.theveterinarynurse.com	The Veterinary Nurse Journal Journal search (Online journal articles)
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www.vetsonline.com	Vets online The Veterinary Times Journal, Veterinary Nursing Times and Veterinary Business Journal (Online journal articles)
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Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 9: Veterinary Practice Management

Unit 10: Animal Nursing

Unit 12: Horse Husbandry

Unit code	T/616/7839
Unit level	4
Credit value	15

Introduction

High-standard husbandry techniques and knowledge are the foundation of caring for any animal. With increased demands placed on horses in all disciplines, there is a need to raise standards in maintaining horse health, fitness and wellbeing. This is partnered with an increased awareness of the financial pressures of keeping horses.

This unit aims to develop the depth of student knowledge on the topic of horse husbandry in a variety of situations. It will form links to welfare legislations, and encourage students to identify where there is a need for reviewing current husbandry techniques through detailed studies of the horse. It will cover the financial implications of various husbandry techniques, and encourage students to consider the modern alternatives available to them in a variety of settings.

Students will be required to discuss the different living situations of horses depending on use, and review how husbandry practices can have an effect on horse wellbeing. They will be able to complete thorough health assessments, provide routine treatments and recognise safe practice while working around horses. The unit aims to give students the knowledge to be able to form husbandry plans for the day-to-day running of a yard, and how to select external services that may be needed.

On completion of this unit, students will have a confident and questioning approach to horse husbandry practices used, to ensure continued development and improvement of equine care. They will be able to perform routine husbandry techniques safely according to recognised industry standards, and support others in the development of these skills. Knowledge gained from this unit will be essential to students entering employment within the industry as managers or advisors to others in a bid to improve welfare conditions.

Learning Outcomes

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

- 1 Discuss the husbandry needs of horses in a variety of living situations to ensure high standards of welfare
- 2 Challenge the effectiveness of horse husbandry practices to promote horse health, fitness and wellbeing
- 3 Design horse husbandry plans to consider both purpose and financial costs
- 4 Complete horse husbandry tasks safely, effectively and efficiently to support the development of others.

Essential Content

LO1 Discuss the husbandry needs of horses in a variety of living situations to ensure high standards of welfare

Welfare legislation and requirements:

Nationally and internationally.

Range of horse management practices:

Stable design, field management, domesticated and free ranging.

Variety of uses of equines and associated demands:

Sport, working, leisure, companion, young stock, stud

Methods to promote fitness and condition, methods of injury prevention, care to manage fatigue and stress.

Other affecting factors of horse welfare that can be managed:

Social interaction, environmental, handling techniques, feed management.

LO2 Challenge the effectiveness of horse husbandry practices to promote horse health, fitness and wellbeing

Signs of health, fitness and wellbeing:

Condition scoring, signs of health and ill health, taking and monitoring TPR

Physical effects of fittening and training

Hoof care and health

Static and dynamic evaluation

Gait analysis: trot up, lameness evaluation.

Providing treatments:

Routine treatments for health problems and injuries, application of dressings, poultices and bandages.

Tubing, hosing.

Safe practices:

Fitting of tack, equipment and horse clothing.

Interpreting signs of horse behaviour.

Methods of handling and restraint.

LO3 Design horse husbandry plans to consider both purpose and financial costs

Routine practices:

Grooming methods, procedures for cleaning and maintaining stables and yards

Caring and storing of tack and equipment

Supplies and stock rotation

Record-keeping.

Planning and yard organisation:

Daily routines, Health and Safety considerations, selecting and sourcing external services: treatments, farriery, dentistry

Worming, daily field/stable maintenance and checks

Exercise and freedom of movement for horses

Isolation management

Vaccination requirements and planning.

LO4 Complete horse husbandry tasks safely, effectively and efficiently to support the development of others

Health and Safety:

Identifying hazards, risk assessments, COSHH, RIDDOR, accident reporting

Groom and rider considerations.

Safe practices:

Handler risk management, handlers clothing, horse behaviour

Routine husbandry tasks:

Methods of control and restraint, trotting up, fitting equipment, grooming methods, feeding, clipping, care of the stable and field.

Developing skills of others:

Evaluating current practices

Reflective practice

Sharing practical skills.

Communication to encourage positive team working

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Discuss the husbandry needs of horses in a variety of living situations to ensure high standards of welfare			LO1 LO2 LO3 D1 Critically analyse, with the use of specific examples, the effect domestication has had on the horse to highlight best practice in horse husbandry techniques
P1 Describe essential husbandry requirements of horses to maintain high levels of welfare according to current legislation		M1 Explain in detail the demands horses may face within different living situations and suggest possible management solutions	
P2 Determine three different living situations of horses and describe the specific care required for each to maintain high levels of welfare			
LO2 Challenge the effectiveness of horse husbandry practices to promote horse health, fitness and wellbeing			
P3 Review the effectiveness of three different horse husbandry practices to promote horse health, fitness and wellbeing		M2 Select and justify alternative horse husbandry practices to promote horse health, fitness and wellbeing	
LO3 Design horse husbandry plans to consider both purpose and financial costs			
P4 Design short-term and long-term horse management plans to consider workload and financial costs on a given yard		M3 Evaluate horse husbandry plans to identify areas of strength and weakness	

Pass	Merit	Distinction
LO4 Complete horse husbandry tasks safely, effectively and efficiently to support the development of others		D2 Critically appraise own performance in detail to create links between own practice and the impact this may have on overall horse wellbeing and care.
P5 Demonstrate safe, effective and efficient routine practices when working around or with horses. P6 Manage a training session to support the development of horse husbandry skills.	M4 Evaluate own performance in completing routine practices to identify areas of strength and improvement.	

Recommended Resources

Textbooks

BREGA, J. (2005) *Essential Equine Studies: Book Two: Health, Nutrition and Fitness*. London: J.A. Allen.

BRITISH HORSE SOCIETY and BATTY-SMITH, J. (2008) *The BHS Complete Manual of Horse and Stable Management*. Revised edn. Shrewsbury: Kenilworth Press.

BROWN, J., PILLINER, S. and DAVIES, Z. (2003) *Horse and Stable Management*. 4th edn. Oxford: Blackwell.

BUSH, K. and COUMBE, K. (2006) *The Complete Equine Emergency Bible: The Comprehensive Guide to Coping with Every Horse-related Emergency From First Aid To Road Safety*. 2nd edn. London: David & Charles.

COUMBE, K. (2012) *Equine Veterinary Nursing*. 2nd edn. London: John Wiley & Sons Ltd.

HOUGHTON BROWN, J. and CLINTON, M. (2010) *Horse Business Management: Managing a Successful Yard*. 4th edn. London: Wiley-Blackwell.

VOGEL, C. (2011) *Complete Horse Care Manual*. London: Dorling Kindersley.

Web

www.cieh.org	Chartered Institute of Environmental Health
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Health and Safety in horse riding establishments and livery yards
(General reference)

digitalcommons.spu.edu	Seattle Pacific University
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Relationships between equine management practices and intestinal parasite infection
(Research)

www.fawac.ie	Farm Animal Advisory Council
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Animal Welfare guidelines for horses, ponies and donkeys
(General reference)

www.gov.uk

Gov.UK – Publications

Code of practice for the welfare of horses, ponies, donkeys and their hybrids

(General reference)

www.thehorse.com

The Horse

Practicing Science-Based Horse Husbandry

(Article)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 6: Animal Anatomy and Physiology

Unit 13: Management of Equine Facilities

Unit code K/616/7840

Unit level 4

Credit value 15

Introduction

Many tasks are required to be completed in the short- and long-term organising and running of a yard or a collection of horses and/or donkeys. These can range from routine tasks such as mucking out and grooming, to long-term care plans, and annual field maintenance. A great variety of yard types exist in the equine sector and for a student to become employable and be selected above the competition, they must be able to demonstrate strong practical skills and a broad knowledge of the running and maintenance of yard facilities. This is a highly industry-focused unit aimed at those wishing to not only work and manage a yard but also those who would stand in an advisory role within the equine industry.

This unit aims to give students the skills to supervise and advise others on the day-to-day organising and running of an equine facility, being able to identify the wider yard requirements outside the care of horses and/or donkeys. Students will be able to identify the strengths of a facility and plan for potential improvements with consideration of legislative requirements.

The different types and areas of facilities will be reviewed, in particular the areas designated for grazing. Students will be able to plan and design grazing areas with consideration of fencing, gateways and watering systems. Students will also be able to develop 12-month grassland management plans to promote good and safe grazing for horses and/or donkeys. They will study the regular maintenance of equipment and facilities, including the management of arena surfaces, watering, lighting and waste, and will also gain a working knowledge of Health and Safety and environmental issues that they may encounter in managing an equine facility.

On completion of this unit, students should be able to confidently demonstrate and discuss practical equine facility management. They will have acquired improved skills of communication, supervising and problem-solving, knowledge of how to manage the variety of areas and systems that may be encountered on a day-to-day basis and the evaluative skills to identify where things can be improved. Detailed knowledge of setting up grazing land for horses and/or donkeys and the management of this to maximise quality all-year grazing will also be acquired.

Learning Outcomes

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

- 1 Describe routine yard maintenance requirements to effectively manage the day-to-day running of a yard
- 2 Plan and design a grazing area for a group of horses and/or donkeys to include fencing, gateways, shelter and water supply
- 3 Develop a 12-month grassland management plan for a specified area of grazing
- 4 Outline an improvement plan to update an equine facility.

Essential Content

LO1 Describe routine yard maintenance requirements to effectively manage the day-to-day running of a yard

Schooling areas:

Maintenance of a variety of surfaces, levelling, harrowing, drainage, irrigation systems, equipment maintenance.

Waste management:

Legislation, methods, costs, environmental impact, drainage, recycling

Feed management and watering systems:

Stock rotation

Feed/forage storage

Ordering and monitoring of feed supplies

Troughs, automatic waterers, seasonal maintenance and care.

Lighting and equipment maintenance:

Yard and school lighting, infrared lamps, horse walkers, treadmills.

General management:

Identifying maintenance requirements, prioritising work, supervising others, record-keeping, Health and Safety, risk assessments

Legislation relevant to a variety of yard settings

Control measures against disease.

LO2 Plan and design a grazing area for a group of horses and/or donkeys to include fencing, gateways, shelter and water supply

Planning and construction:

Fencing types, gates, types of shelter, watering systems and positioning.

Suitability:

Materials, size of grazing area, specialist needs: young stock, stallions, permanent or temporary fencing access, security.

Costs:

Sources of fencing materials, accurate measurements, costings of material and labour, timescales.

LO3 Develop a 12-month grassland management plan for a specified area of grazing

Recognising quality of grazing:

Desirable and undesirable grasses and plants.

Soil properties.

Fertiliser and drainage:

Suitable use of fertiliser

Need and management of drainage, drainage system.

Pasture management systems:

Rotation, use of electric fencing, rolling, harrowing, removal of droppings, top cutting, recognising and removing poisonous plants

Stocking rates and alternative grazers.

LO4 Outline an improvement plan to update an equine facility.

Types of equine facilities:

Stud, competition centre, riding school, livery yard, private facility

Muck heap, feed room, tack room, horse walker, hacking, arenas, barns, stabling, wash downs, turn out and storing of medicines/chemicals

Yard security, Health and Safety

Isolation and quarantine facilities.

Construction considerations:

Stable design and maintenance.

Planning requirements, construction processes and materials, specifications, construction contracts guarantees, timescales, costs.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Describe routine yard maintenance requirements to effectively manage the day-to-day running of a yard		D1 Manage a routine maintenance activity and evaluate effectiveness
P1 Explain routine maintenance tasks which are essential to manage a yard effectively	M1 Develop a plan of maintenance tasks to be completed on a specified yard, with reasoning to emphasise importance	
LO2 Plan and design a grazing area for a group of horses and/or donkeys to include fencing, gateways, shelter and water supply		LO2 LO3 D2 Critically analyse reasoning for common issues with grazing and suggest possible solutions
P2 Design an area of grazing for a group of horses and/or donkeys to include details of fencing, gateways, shelter and water supply	M2 Evaluate the choices of materials used in a grazing area, to make informed decisions	
LO3 Develop a 12-month grassland management plan for a specified area of grazing		
P3 Outline pasture management systems and procedures P4 Create a 12-month grassland management plan to promote improved grazing for horses and/or donkeys for a specified area	M3 Evaluate a specified grazing area to predict potential change of management within the year, according to soil type, lay of land and current forage	
LO4 Outline an improvement plan to update an equine facility		D3 Present to an audience, a proposed improvement plan for an equine facility and respond to questions in a professional manner
P5 Describe current facilities that exist at an equine establishment P6 Complete a detailed SWOT analysis of an equine establishment to suggested updating and improvement of facilities	M4 Develop an improvement plan to include a timeline and approximate costs in labour and materials	

Recommended Resources

Textbooks

- ALLISON, K. (2011) *A Guide to Plants Poisonous to Horses*. London: J.A. Allan.
- AUTY, I. (2008) *BHS Complete Manual of Horse and Stable Management*. London: Kenilworth Press Ltd.
- BREGA, J. (2010) *Equine Business Management (Essential Equine Studies)*. London: J.A. Allan.
- FRAME, J. (2011) *Improved Grassland Management*. New edn. London: The Crowood Press Ltd.
- HOUGHTON BROWN, J. (2010) *Horse Business Management: Managing a Successful Yard*. 4th edn. London: Wiley-Blackwell.
- RANELAGH, E. (2005) *Managing Grass for Horses: The Responsible Owners Guide*. London: J.A. Allan.

Web

www.bhs.org.uk	British Horse Society Pasture Management (General reference)
www.britishgrassland.com	British Grassland Society Horse Grazing and Paddock Management (General reference)
www.pcuk.org	Pony Club UK / Chartered Institute of Environmental Health Health and Safety on horse riding establishments and livery yards (General reference)
www.teagasc.ie	Rural Economy and Development Programme Grassland for Horses (Research)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 2: Business and the Business Environment

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

Unit 12: Horse Husbandry

Unit 14:

Management of Exotic Animal Species

Unit code M/616/7841

Unit level 4

Credit value 15

Introduction

The keeping of exotic animals represents an expanding sector of the animal industry. As it becomes increasingly common for private and public collections to keep exotic animals, the workforce needs to become increasingly familiar with the diverse range of animals and their requirements. This sector includes environments such as zoological gardens, wildlife sanctuaries and educational collections.

Exotic animals, by their nature, are essentially wild animals and as such are likely to have very specialist requirements in terms of their health, behaviour, diet and environment. By completing this unit, students will explore the diverse exotic animal industry/sector and its associated issues. They will learn about the comparative biology of exotic animal groups and how this affects their care and husbandry needs.

In order to meet animals' needs and promote their welfare, students will gain skills in designing and maintaining appropriate environmental conditions such as temperature and humidity by employing suitable equipment and materials. Students will gain insights into the wild diets of animals and how nutritional and behavioural needs can be met in captivity. Students will also develop their knowledge of exotic animal health, identifying and managing a wide range of diseases and disorders.

Students will gain important theoretical knowledge and practical skills in promoting the welfare of a wide range of different exotic animal species. Upon completion of this unit, students will be well prepared to engage in employment in an exotic animal collection where they can apply what they have learned.

Learning Outcomes

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

- 1 Explore the principles of exotic animal ownership and management
- 2 Evaluate the health and welfare of exotic animals in line with relevant legislative and industry standards
- 3 Explain the husbandry principles and practices for promoting exotic animal welfare to relevant standards
- 4 Implement husbandry practices for a range of exotic animal species in line with relevant standards.

Essential Content

LO1 Explore the principles of exotic animal ownership and management

Reasons and purposes for exotic animal collections:

Retail

Exhibition

Conservation

Education

Ethical criticisms and justifications.

Economic and socio-cultural context:

History of exotic animal ownership

Pet trade

Black markets

Public attractions.

Legislation:

Local, national and international

Public Health and Safety

Environmental protection

Licensing

Transportation

Trade.

LO2 Evaluate the health and welfare of exotic animals in line with relevant legislative and industry standards

Comparative biology of exotic animal anatomical systems:

Mammals, reptiles, birds, amphibians, fish, invertebrates

Health, clinical indicators.

Health issues affecting exotic animals:

Pathogenic illness

Parasites

Metabolic disorders

Environmental disease

Genetic disorders

Injuries.

Health management strategies:

Hygiene controls

Preventative strategies

Treatments.

Definitions and measures of welfare:

External measures

Regulatory bodies.

Behavioural and symptomatic indicators of health and welfare:

Stress indicators.

LO3 Explain the husbandry principles and practices for promoting exotic animal welfare to relevant standards

Nutrition:

Nutrient groups, sources and impact on animals' bodies

Comparing wild diets to availability of captive diets

Feeding behaviours.

Environmental design:

Temperature

Humidity

Lighting

Substrate

Features

Chemistry

Social housing

Access and management

Measurements

Comparing natural habitats to availability of conditions in captivity

Comparative behaviour and anatomy of exotic animal groups.

Record-keeping and information management:

Online and offline systems.

ARKS

ZIMS.

LO4 Implement husbandry practices for a range of exotic animal species in line with relevant standards.

Sourcing and use of relevant equipment and materials

Industry practices and procedures:

Codes of practice and industry guidelines

Maintaining hygiene.

Cleaning products and techniques.

Feeding techniques:

Equipment

Methods

Preparation

Presentation styles

Recording and monitoring intake

Resolving problems in feeding.

Maintaining housing:

Principles of enclosure design

Use of materials

Displaying for exhibition.

Handling and restraint

Factors affecting practices:

Finances

Staff ability

Scheduling

Context of collection.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explore the principles of exotic animal ownership and management			D1 Critically analyse the contributing cultural, economic and legislative context of a specific exotic animal collection
P1 Discuss the variety of contexts for keeping exotic animals in captivity	P2 Explain the criteria of relevant legislation for the keeping of exotic animal collections	M1 Assess the impact of legislation on the exotic animal trade/sector	
LO2 Evaluate the health and welfare of exotic animals in line with relevant legislative and industry standards			LO2 LO3 LO4 D2 Critically evaluate an exotic animal collection in terms of the promotion of animal welfare in line with relevant industry and legislative standards
P3 Examine the causes, treatment and prevention of diseases/disorders affecting exotic animals	P4 Discuss behavioural indicators of welfare for exotic animals	M2 Develop an in-depth health management plan for an exotic animal species	
LO3 Explain the husbandry principles and practices for promoting exotic animal welfare to relevant standards			
P5 Discuss the impact of correct nutritional provision on the welfare of exotic animals	P6 Discuss the impact of appropriate environmental conditions on the welfare of exotic animals	M3 Develop plans for husbandry routines for exotic animals	
LO4 Implement husbandry practices for a range of exotic animal species in line with relevant standards			
P7 Carry out activities which promote exotic animal welfare to relevant industry and legislative standards		M4 Reflect on the effectiveness of husbandry activities carried out	

Recommended Resources

Textbooks

BALLARD, B. and CHEEK, R. (2016) *Exotic Animal Medicine for the Veterinary Technician*. 3rd edn. Wiley-Blackwell.

CALDWELL, J.P. and VITT, L.J. (2013) *Herpetology: An Introductory Biology of Amphibians and Reptiles*. 4th edn. Cambridge MA: London: Academic Press.

COBAUGH, A., IRWIN, M. and STONER, J. (2013) *Zookeeping: An Introduction to the Science and Technology*. Chicago: University of Chicago Press.

HOSEY, G., MELFI, V. and PANKHURST, S. (2013) *Zoo Animals: Behaviour, Management and Welfare*. 2nd edn. Oxford: Oxford University Press.

TYNES, V. (2010) *Behavior of Exotic Pets*. London: Wiley-Blackwell.

Web

abwak.org	The Association of British and Irish Wild Animal Keepers (General reference)
www.cites.org	Convention on the International Trade in Endangered Species (General reference)
www.waza.org	World Association of Zoos and Aquariums (General reference)
www.zoolex.org	Zoolex Wild animal enclosure design guidance (General reference)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 4: Animal Behaviour in Society

Unit 5: Animal Husbandry

Unit 15: Animal Collection Management

Unit 26: Evolution and Adaptations

Unit 15: Animal Collection Management

Unit code T/616/7842

Unit level 4

Credit value 15

Introduction

Animals are housed using a variety of different management systems across the animal and veterinary industries. It is therefore essential that anyone wishing to work within these sectors is able to judge the suitability of animal accommodation to meet animals' needs, as well as being able to provide care to animals which maintains their health and optimises their welfare.

In this unit, students will review relevant legislation that governs the keeping, management and transportation of animals. Common husbandry methods used within companion animal, equine, exotic, zoological and farm animal collections will be reviewed to enable students to make informed judgements on how best to care for animals.

Students will learn how to safely handle and restrain a variety of animal species to facilitate routine management tasks. They will also be able to sex animals to prevent unwanted breeding or aggression within collections. Students will analyse how to prepare animal accommodation for a range of species, taking into account animals' health, welfare and behavioural requirements, as well as demonstrating safe working practices to prevent the spread of disease within animal collections.

Successful completion of this unit will prepare students to work within any area of the animal industry which requires them to care for or manage individual animals or animal collections.

Learning Outcomes

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

- 1 Demonstrate competent handling and restraint techniques for a range of animal species
- 2 Prepare animal accommodation which meets the needs of a range of animal species
- 3 Appraise the suitability of animal management facilities
- 4 Plan recommendations to animal collections to improve animal welfare.

Essential Content

LO1 **Demonstrate competent handling and restraint techniques for a range of animal species**

Principles of animal restraint – this may occur using live animals or via simulation using models:

Cats, dogs, small mammals, exotic animals, horses, livestock

Behavioural assessment

Restraint for health checking

Restraint for transportation

Restraint for sexing.

Safe handling and movement of animals:

Ergonomics and manual handling: risks, limitations of humans, positioning of loads, weight, stability, height, experience, physical condition and good practice

Role of restraint equipment: muzzles, leads, collars, lupi, harness, dog catcher, cat bags, crush cage, cat muzzle, towels, containers for exotics and small mammals, head collars, chifney, twitch, stocks, stretches, hoists, sedation and chemical restraint etc

Safe techniques for moving loads and different animals

Provision of a safe and secure environment

Temporary accommodation types

Personal protective equipment

Health and Safety.

LO2 **Prepare animal accommodation which meets the needs of a range of animal species**

Suitability of animal accommodation and management:

Housing and materials: use, advantages and disadvantages

Disease transmission: common diseases

Cleaning substances and their uses

Correct management of cleaning, feeding, watering, exercise and enrichment

Frequency of monitoring and record-keeping

Daily, weekly and monthly tasks

Monitoring frequency and record-keeping

Cleaning protocols: frequency, order, equipment, retaining same equipment for duration of stay

Barrier nursing

Isolation and quarantine

Health and Safety, and risk assessment

Species-specific requirements.

Meeting animals' needs:

Behaviour assessment

Welfare assessment

Feeding

Water

Spatial requirements

Bedding

Housing/shelter

Exercise

Excretion

Enrichment

Legislation

Social interaction

Sex of inhabitants

Individual versus group housing.

LO3 Appraise the suitability of animal management facilities

Welfare assessment of animal management facilities

Identify suitable accommodation requirements:

Patient factors: species, age, sex, condition, behaviour and welfare considerations, legislative requirements, monitoring, duration of stay, purpose of stay, bedding, furniture, water and food bowls

Environmental factors: heating, lighting, location, barrier/isolation, electricity, water, drainage, security, accessibility, ventilation, noise, access to external areas.

Provision of safe, secure, hygienic and appropriate housing:

Frequency and procedures for cleaning animal accommodation

Monitoring of signs of health and disease

Selection and provision of suitable diets to meet nutritional and water requirements of animals

Designing and completing animal records

Provision of exercise and excretory opportunities

Enrichment opportunities

Human-animal interaction.

LO4 Plan recommendations to animal collections to improve animal welfare

Enrichment:

Food

Sensory: visual, olfactory (smell), auditory (hearing), taste and tactile (touch)

Environmental

Manipulative

Behavioural/social.

Welfare assessment:

Physiological measures

Physical measures

Behavioural measures

Eustress, stress and distress.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Demonstrate competent handling and restraint techniques for a range of animal species		D1 Interpret the role of behaviour assessment within handling and restraint of animals
P1 Select suitable handling and restraint equipment for defined scenarios P2 Demonstrate competent handling and restraint techniques for defined scenarios	M1 Analyse if the environment being used is safe for animal handling	
LO2 Prepare animal accommodation which meets the needs of a range of animal species		D2 Assess how the prepared accommodation prevents disease transmission
P3 Prepare suitable accommodation for defined case studies P4 Describe how the accommodation prepared meets the animals' needs	M2 Discuss how additions to the prepared animal accommodation could enhance animal welfare	
LO3 Appraise the suitability of animal management facilities		D3 Evaluate how management protocols are used in the facility to prevent disease and keep the facility secure
P5 Perform an animal welfare assessment for a selected animal collection/facility P6 Assess if the animal collection/facility is suitable for the animals housed in it	M3 Appraise how the facility meets the needs of the animals housed within it	
LO4 Plan recommendations to animal collections to improve animal welfare		D4 Design and validate one form of enrichment which could be used in the named animal collection /facility to improve animal welfare
P7 List three recommendations which would improve animal welfare for a named animal collection/facility P8 Justify how the recommendations made would improve animal welfare	M4 Evaluate how different forms of enrichment can be used to enhance animal welfare	

Recommended Resources

Textbooks

- ACKERMAN, N. and ASPINALL, V. (2016) *The Complete Textbook of Veterinary Nursing*. 3rd edn. London: Elsevier Health.
- ALDERTON, D. (2003) *Exotic Pet Handbook*. London: Southwater.
- ANDERSON, R.S. and EDNEY, A.T.B. (1991) *Practical Animal Handling*. Oxford: Pergammon Press.
- AUTY, I. and BATTY-SMITH, J. (2008) *BHS Complete Manual of Horse and Stable Management*. Wykey: Kenilworth Press.
- HOME OFFICE (1989) *Code of Practice for the Housing and Care of Animals Used in Scientific Procedures*. London: HMSO.
- HOUGHTON-BROWN, J., PILLINER, S. and DAVIES, Z. (2003) *Horse and Stable Management*. London: Wiley-Blackwell.
- JUDAH, V. (2016) *Exotic Animal Care & Management*. New York: Thomson Delmar Learning.
- MEREDITH, A. and REDROBE, S. (2012) *BSAVA Manual of Exotic Pets*. Gloucester: British Small Animal Veterinary Association.
- POOLE, T.B. (1999) *The UFAW Handbook on the Care and Management of Laboratory Animals*. Harlow: Longman Scientific & Technical.
- WILLIAMS, J.M. (2009) *The Complete Textbook of Animal Health and Welfare*. London: Elsevier.

Web

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|--|---|
| www.defra.gov.uk | Department for Food and Rural Affairs
(General reference) |
| www.ufaw.org.uk | Universities Federation for Animal Welfare
(General reference) |

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 5: Animal Husbandry

Unit 7: Animal Nutrition

Unit 16: Human Resource Management

Unit code A/616/7843

Unit level 4

Credit value 15

Introduction

The aim of this unit is to enable students to appreciate and apply principles of effective human resource management (HRM). People are the lifeblood of any land-based organisation and being able to attract, recruit and retain talented staff and volunteers is at the core of all HRM activity.

This unit will explore the tools and techniques used in HRM to maximise the employee/volunteer contribution and how to use HR methods to gain competitive advantage. Students will explore the importance of training and development in building and extending the skills base of the organisation and ensuring it is relevant to the ever-changing business environment. Students will also consider the growing importance of becoming a flexible organisation within the land-based sector, with an equally flexible labour force, and become familiar with techniques of job design and reward systems.

The unit investigates the importance of good employee/volunteer relations and the ways in which employers engage with their staff and possibly with trade unions. Students will gain an understanding of the law governing HRM processes as well as the best practices which enable an employer to become an 'employer of choice' in their labour market.

Learning Outcomes

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

- 1 Explain the purpose and scope of human resource management in terms of resourcing a land-based organisation with talent and skills appropriate to fulfil business objectives
- 2 Evaluate the effectiveness of the key elements of human resource management in a land-based organisation
- 3 Analyse internal and external factors that affect human resource management decision-making, including employment legislation
- 4 Apply human resource management practices in a work-related context.

Essential Content

LO1 Explain the purpose and scope of human resource management in terms of resourcing a land-based organisation with talent and skills appropriate to fulfil business objectives

The nature and scope of HRM:

Definitions of HRM

The main functions and activities of HRM

The 'Best Fit' approach versus 'Best Practice'

The hard and soft models of HRM

Workforce planning

Types of labour market, labour market trends and PESTLE

The internal labour market

Analysing turnover, stability and retention

The impact of legal and regulatory frameworks

The impact that advances in technology have had upon improving the efficiency of HR practices.

Recruitment (employees and volunteers):

Sources of recruitment: internal versus external recruitment

Job analysis, job descriptions, personal specifications and competency frameworks.

Selection (employees and volunteers):

Main methods of selection: strengths and weaknesses of each

Reliability and validity as key criteria.

On-boarding and induction (employees and volunteers):

The issues affecting successful induction and socialisation of employees.

LO2 Evaluate the effectiveness of the key elements of human resource management in a land-based organisation

Learning, development and training:

Differentiating development and training

Identifying training needs – the training gap

Types of training

Evaluation of training.

Job and workplace design:

Reward management: extrinsic and intrinsic rewards from work

The link between motivational theory and reward

Series of job design-job extension techniques.

The flexible organisation:

Types of flexibility: numerical, structural and functional flexibility

Models of flexible organisations e.g. Handy, Atkinson

Flexible working options in modern organisations

Benefits to employers and benefits to employees/volunteers of flexible working practices.

Performance and reward:

Performance management and methods used to monitor employee/volunteer performance

Types of payment and reward system

Methods of a determination.

LO3 Analyse internal and external factors that affect human resource management decision-making, including employment legislation

Employee/volunteer relations:

Maintaining good employee/volunteer relations

Strategies for building and improving employee/volunteer relations and engagement.

Employee/volunteer relations and the law:

The purpose of employment law

Key legal issues and constraints e.g. equality, data protection, Health and Safety, redundancy, dismissal, employment contracts

Ethical and social responsibilities.

Trade unions and workplace representation:

The role of trade unions – local/national

Collective agreements

Discipline, grievances and redundancy – best practice.

LO4 Apply human resource management practices in a work-related context.

Job and person specifications:

Preparing job specifications and person specifications applicable to the recruitment context and needs of the organisations, taking into account legislation and company policies.

Recruitment and selection in practice:

The impact of technology on improving the recruitment and selection process
e.g. the use of online resources, digital platforms and social networking

Designing and placing job advertisements

Shortlisting and processing applications

Interview preparation and best practice

Selection best practice.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Explain the purpose and scope of human resource management in terms of resourcing a land-based organisation with talent and skills appropriate to fulfil business objectives		D1 Critically evaluate the strengths and weaknesses of different approaches to recruitment and selection, supported by specific examples
P1 Explain the purpose and the functions of HRM, applicable to workforce planning and resourcing an organisation P2 Explain the strengths and weaknesses of different approaches to recruitment and selection	M1 Assess how the functions of HRM can provide talent and skills appropriate to fulfil business objectives M2 Evaluate the strengths and weaknesses of different approaches to recruitment and selection	
LO2 Evaluate the effectiveness of the key elements of human resource management in a land-based organisation		D2 Critically evaluate HRM practices and application within an organisational context, using a range of specific examples
P3 Explain the benefits of different HRM practices within an organisation for both the employer and employee/volunteer P4 Evaluate the effectiveness of different HRM practices in terms of raising organisational profit and productivity	M3 Explore the different methods used in HRM practices, providing specific examples to support evaluation within an organisational context	
LO3 Analyse internal and external factors that affect human resource management decision-making, including employment legislation		LO3 LO4 D3 Critically evaluate employee relations and the application of HRM practices that inform and influence decision-making in an organisational context
P5 Analyse the importance of employee/volunteer relations in respect to influencing HRM decision-making P6 Identify the key elements of employment legislation and the impact it has upon HRM decision-making	M4 Evaluate the key aspects of employee/volunteer relations management and employment legislation that affect HRM decision-making in an organisational context	

Pass	Merit	Distinction
LO4 Apply human resource management practices in a work-related context		
P7 Illustrate the application of HRM practices in a work-related context, using specific examples	M5 Provide a rationale for the application of specific HRM practices in a work-related context	

Recommended Resources

Textbooks

ARMSTRONG, M. and TAYLOR, S. (2014) *Armstrong's Handbook of Human Resource Management Practice*. 13th edn. London: Kogan Page.

BACH, S. and EDWARDS, M. (2013) *Managing Human Resources*. Oxford: Wiley.

BRATTON, J. and GOLD, J. (2012) *Human Resource Management: Theory and Practice*. 5th edn. Basingstoke: Palgrave.

TORRINGTON, D, et al. (2011) *Human Resource Management*. 8th edn. London: Prentice Hall.

Links

This unit links to the following related units:

Unit 2: Business and the Business Environment

Unit 9: Veterinary Practice Management

Unit 17: Marketing Essentials

Unit code	F/616/7844
Unit level	4
Credit value	15

Introduction

This unit is designed to introduce students to the principles of marketing, enabling them to develop a basic marketing plan and to employ elements of the marketing mix to achieve results. While students will learn the underpinning theories and frameworks, they will also be able to relate these to real-world examples, including products/services that they encounter in their own daily lives.

Organisations that work within the land-based sector or are associated with it such as Cadbury, Nestle, Unilever, Muller, John Deer, ABP, NFU and small local businesses all have at least one thing in common: they all use marketing to influence us to engage with their products and/or services. Whether it is becoming a loyal customer, buying a product and service or donating to a charity, organisations use a range of marketing techniques and tools to inform and influence us.

The knowledge, understanding and skill sets that students will gain on successfully completing this unit will enhance their career opportunities, whether setting up their own business or being employed by a land-based organisation.

Learning Outcomes

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

- 1 Explain the role of marketing and how it interrelates with other functional units of a land-based organisation
- 2 Compare ways in which organisations use elements of the marketing mix (7Ps) to achieve overall business objectives
- 3 Develop and evaluate a basic marketing plan.

Essential Content

LO1 Explain the role of marketing and how it interrelates with other functional units of a land-based organisation

Definitions and the marketing concept:

Definitions of marketing and the nature of marketing

The development of the marketing concept e.g. current and future trends

How the external environment influences and impacts upon marketing activity.

The role of marketing:

The structure and operations of marketing departments

Overview of marketing processes that include analysis, strategic planning and the marketing mix

The different roles of marketing within both a B2C and B2B context.

The interrelationships of functional units:

Marketing as a business function

The different roles of business units and the interrelationships between these functional units and marketing.

LO2 Compare ways in which organisations use elements of the marketing mix (7Ps) to achieve overall business objectives

The 7Ps marketing mix:

Product: Differences between products and services, importance of brands, product development and product lifestyle

Price: Pricing context, pricing strategies and tactics

Place: Channel management, supply chain management and logistics

Promotion: Integrated communication mix and promotional tools

People: The different roles of 'people' in marketing e.g. customer interfacing and support personnel, and the different skills, attitudes and behaviour of people delivering the product or service to customers

Physical evidence: The tangible aspects of service delivery – visual, aural and olfactory elements

Process: Systems and processes involved in delivering a consistent service, and different types of processes used to expedite the marketing function.

Achieving overall business objectives:

The shift from the 4Ps to the 7Ps and the significance of the extended marketing mix

An overview of the marketing planning process (analysis, planning, implementation and control) and marketing strategy.

LO3 Develop and evaluate a basic marketing plan

Marketing planning:

The importance and value of marketing plans

The links between marketing plans, marketing objectives and marketing strategies

Evaluating and monitoring marketing plans using appropriate control and evaluation techniques e.g. sales analysis, market-share analysis, efficiency ratios and cost-profitability analysis.

Structure and development of marketing plans:

Market segmentation and target market selection

Setting goals and objectives, situational analysis tools and techniques, creating a marketing strategy, allocation of resources, and monitoring and control measures.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explain the role of marketing and how it interrelates with other functional units of a land-based organisation			D1 Critically analyse and evaluate the key elements of the marketing function and how they interrelate with other functional units of an organisation
P1 Explain the key roles and responsibilities of the marketing function	P2 Explain how roles and responsibilities of marketing relate to the wider organisational context	M1 Analyse the roles and responsibilities of marketing in the context of the marketing environment M2 Analyse the significance of interrelationships between marketing and other functional units of an organisation	
LO2 Compare ways in which organisations use elements of the marketing mix (7Ps) to achieve overall business objectives			LO2 LO3 D2 Design a strategic marketing plan that tactically applies the use of the 7Ps to achieve overall marketing objectives
P3 Compare the ways in which different organisations apply the marketing mix to the marketing planning process to achieve business objectives		M3 Evaluate different tactics applied by organisations to demonstrate how business objectives can be achieved	
LO3 Develop and evaluate a basic marketing plan			
P4 Produce and evaluate a basic marketing plan for an organisation		M4 Produce a detailed, coherent, evidence-based marketing plan for an organisation	

Recommended Resources

Textbooks

BRASSINGTON, F. and PETTITT, S. (2012) *Essentials of Marketing*. 3rd edn. Harlow: Pearson.

GROUCUTT, J. and HOPKINS, C. (2015) *Marketing (Business Briefings)*. London: Palgrave Macmillan.

JOBBER, D. and CHADWICK, F. (2012) *Principles and Practice of Marketing*. 7th edn. Maidenhead: McGraw-Hill.

KOTLER, P. and ARMSTRONG, G. (2013) *Principles of Marketing*. London: Prentice Hall.

MCDONALD, M. and WILSON, H. (2011) *Marketing Plans: How to Prepare Them, How to Use Them*. 7th edn. Chichester: John Riley and Sons.

Web

www.ama.org

American Marketing Association
Homepage

General reference

www.cim.co.uk

Chartered Institute of Marketing
(UK)

Homepage

General reference

Links

This unit links to the following related units:

Unit 2: Business and the Business Environment

Unit 9: Veterinary Practice Management

Unit 18: Equitation (Riding)

Unit code J/616/7845

Unit level 4

Credit value 15

Introduction

Understanding the principles of training and the ability to implement them in a calm and controlled manner whilst training horses on the flat is a skill valued by many employers. These skills are paramount as foundations to riding, regardless of the end discipline in which the rider chooses to participate. A good position helps the rider to maintain security and be effective while training horses and also ensures a positive bond is developed.

In this unit students will develop their riding position and reflect on its effectiveness. They will develop and improve a range of skills in working horses on the flat and use ridden school movements and complex lateral work on a variety of horses to maintain and improve their way of going. Students will also develop a key understanding of the welfare implications involved in the training and development of horses and ensure that welfare standards are high, with horses as a priority.

Students will be able to select and use suitable exercises and assess their effectiveness, making decisions on how to improve and alter the horse's way of going. This can be by lengthening and shortening stride length, ensuring the horse is working on the bit and is accepting and soft in the contact. Students will investigate the levels of training required from novice to elementary-level British Dressage or an equivalent, and work a horse up to and above that standard. They will use learning theories to support and underpin the development of themselves as riders and the horses in training.

The unit requires students not only to work on a schooled horse and demonstrate the ability to get these horses to perform to the required standard, but also to demonstrate the ability to ensure horses with a variety of temperaments and at a range of abilities can perform select movements.

This unit will enable students to develop safe working practices, drawing on learning from across the qualification in relation to equine performance, horses and human relationship, and behaviour. This will prepare students for employment within the equine industry for a variety of disciplines.

Learning Outcomes

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

- 1 Perform ridden flatwork exercises to demonstrate school movements, basic and complex lateral work – with the use of natural and artificial aids
- 2 Perform ridden flatwork exercises using poles work to enhance movement and develop consistent rhythm
- 3 Review training and suggest improvements for both horse and rider
- 4 Demonstrate the skills to influence a horse's way of going when schooling on the flat.

Essential Content

LO1 Perform ridden flatwork exercises to demonstrate school movements, basic and complex lateral work – with the use of natural and artificial aids

Correct riding position:

Natural aids

Artificial aids.

Use of the aids:

Correct definitions e.g. upwards transitions, transitions in a gait, downwards transitions, half-halt, halt and rein back, turns and circles, 20m, 15m, 10m to turn-on-the-forehand, leg yielding, shoulder fore, shoulder-in, lengthening and collection.

Health and Safety

LO2 Perform ridden flatwork exercises using poles work to enhance movement and develop consistent rhythm

Range of transitions and movements:

Upwards transitions, transitions in a gait (lengthening and collection), downwards transitions, half-halt, halt and rein back, turns and circles, 20m, 15m, 10m to turn-on-the-forehand, leg yielding, shoulder fore, shoulder-in.

Using pole work to enhance movement:

Trotting poles

Canter poles

Raised poles.

LO3 Review training and suggest improvements for both horse and rider

Reflective practice:

Gibbs' cycle of reflection

Learning theories

Learning cycles (Kolb)

Reflective portfolio.

Methods of checking progress:

Coach/instructor feedback

Competition results

Ease of movements

Increased obedience.

Building on progress:

Goal-setting

Adjusting goals

Mid-term and long-term goals

Complementary training e.g. loose schooling, hacking, jumping.

LO4 Demonstrate the skills to influence horses when schooling on the flat to improve way of going

Planning:

Qualities of a good rider/trainer.

The scales of training:

Way of going, rhythm, suppleness, contact, impulsion, straightness and collection.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Perform ridden flatwork exercises to demonstrate school movements, basic and complex lateral work – with the use of natural and artificial aids			LO1 LO2 D1 Demonstrate the ability to work horses to elementary standard (BHS Level 4 or equivalent), evaluating their way of going
P1 Analyse personal riding position and how it affects horses' way of going P2 Perform ridden flatwork and lateral work on schooled horses, showing a balanced, supple and independent seat	M1 Perform ridden flatwork on horses with a variety of temperaments and of differing levels of training, showing a balanced, supple and independent seat		
LO2 Perform ridden flatwork exercises using poles work to enhance movement and develop consistent rhythm			
P3 Describe the importance of using pole work to improve flatwork movement P4 Perform ridden flatwork using poles to enhance movement, demonstrating supple and independent seat	M2 Evaluate the significance of the link between riding position and application of the aids whilst working a horse over poles		

Pass		Merit	Distinction
LO3 Review training and suggest improvements for both horse and rider			LO3 LO4 D2 Analyse the influence of reflective riding diary on planning a session to improve a horse's way of going
P5 Describe the process of reflection and its importance in training, using theory models to support work P6 Produce a reflective riding diary	M3 Plan and perform ridden sessions and use information to inform reflective riding diary		
LO4 Demonstrate the ability to influence horses when schooling on the flat to improve way of going			
P7 Explain basic training of the horse P8 Perform school movements to improve horse's way of going	M4 Analyse, with reference to theory, how correctly ridden school movements and basic lateral work can develop the basic training of the horse.		

Recommended Resources

Textbooks

BALLOU, J.A. (2009) *Equine Fitness: A Program of Exercises and Routines for Your Horse*. 1st edn. Massachusetts: Storey Publishing.

FRENCH, J. (1992) *The BHSAI Course Companion*. London: J.A. Allen & Company Limited.

GERMAN NATIONAL EQUESTRIAN FEDERATION (1987) *Advanced Techniques of Riding*. Buckingham: The Kenilworth Press Ltd.

GERMAN NATIONAL EQUESTRIAN FEDERATION (2006) *The Principles of Riding*. Buckingham: The Kenilworth Press Ltd.

HIGGINS, G. and MARTIN, S. (2015) *Posture and Performance: Principles of Training Horses from the Anatomical Perspective*. 1st edn. Shrewsbury: Kenilworth Press.

LINCOLN, A. (2008) *Equine Sports Coaching*. Oxford: Blackwell Publishing.

LYLE, J. (2002) *Sports Coaching Concepts: A Framework for Coaches' Behaviour*. London: Routledge.

PAALMAN, A. (1980) *Training Showjumpers*. London: J.A. Allen & Company Limited.

SIVEWRIGHT, M. (1984) *Thinking riding: Book 2 "In Good Form"*. 7th edn. London: J.A. Allen & Company Limited.

THE BRITISH HORSE SOCIETY (2011) *The BHS Manual of Equitation*. 2nd edn. Buckingham: The Kenilworth Press Ltd.

ZIEGNER, K.A. (2002) *Elements of Dressage: A Guide for Training the Young Horse*. Northampton: Cadmos Equestrian.

Web

www.horseandhound.co.uk Horse and Hound
Horse and rider training
(Article)

Links

This unit links to the following related units:

Unit 20: Equestrian Performance

Unit 37: Equitation II (Riding)

Unit 19: Horse and Human Relationship

Unit code L/616/7846

Unit level 4

Credit value 15

Introduction

This unit will look at the changes and advances in human and horse relationship over many years. The unit will allow students to identify how horses have changed within society and the alteration in the roles that a horse has had through the years. Students will evaluate how managing horses in varied ways can alter the relationship between human and horse in both positive and negative ways, looking into elements of husbandry routines and behaviour, and making links to other key aspects of equine management.

Students will identify training methods of natural horsemanship, analysing how this enhances human and horse bond, as well as looking into recent advances of using horses in therapy. This knowledge will allow students to work in a variety of equine sectors where a range of training methods are used.

Overall, key links will ensure that these human and horse relationships look to benefit both as well as improving rider relationships with horses when in a performance situation. This knowledge will support many aspects of work in the equestrian industry, such as understanding the suitability of horses for rider needs, working as an equine coach, breeder or trainer, as well as being understanding of key husbandry and welfare needs that can impact on horse and human relationship. This unit also offers the opportunity to understand how horses can be utilised in other avenues and therefore offers insight into other potential working avenues. This knowledge is vital whether it's for a groom, rider, coach, analyst, behaviourist, breeder or trainer.

Learning Outcomes

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

- 1 Discuss the domestication and uses of horses
- 2 Evaluate the influence of human management on horse and human relationship
- 3 Describe methods of natural horsemanship and how horses are used for therapy
- 4 Analyse the influence of horse and rider relationship on performance.

Essential Content

LO1 Discuss the domestication and uses of horses

Domestication of horses:

Timescale and process of domestication

Influences on culture and history.

Uses of horses:

Food, transport, military, farming, performance, gambling, load bearing, milk, companionship.

LO2 Evaluate the influence of human management on the horse and human relationship

Husbandry:

Feeding

Accommodation

Grooming

Grazing.

Interaction:

Social contact with humans and horse

Long-term interaction (owner)

Short-term interaction (vet, farrier, coach).

Equine personality and behaviour

Human:

Voice

Mannerisms

Body positioning

Gender

Approach.

LO3 Describe methods of natural horsemanship and how horses are used for therapy

Types of natural horsemanship:

Bonds created

Purpose of natural horsemanship

Specific techniques and industry influences (Pat Parelli, Monty Roberts)

Positives and negatives of natural horsemanship.

Horses used for therapy (Equine-assisted therapy – EAT):

ADD, anxiety, autism, dementia, delay in mental development, Down's syndrome and other genetic syndromes, depression, trauma and brain injuries, behaviour and abuse issues.

Horses in assisted therapy

LO4 Analyse the influence of horse and rider relationship on performance.

Injury rates

Coaching

Psychological factors of horse and rider.

Rider/horse suitability:

Personality, training, experience, behaviour.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Discuss the domestication and uses of horses		LO1 LO2 D1 Critically analyse the use of horses in the last century and how this has influenced modern-day husbandry management techniques and horse and human interaction
P1 Discuss the process of domestication of horses and its influence on human history and culture P2 Describe ways in which horses have been utilised by humans	M1 Analyse the use of horses throughout the last century	
LO2 Evaluate the influence of human management on horse and human relationship		
P3 Discuss husbandry management technique, identifying how they could negatively/positively influence horse and human relationship P4 Discuss the importance of interaction in establishing a positive horse and human relationship	M2 Evaluate how management techniques can positively and negatively influence the relationship between horse and human	
LO3 Describe methods of natural horsemanship and how horses are used for therapy		D2 Critically evaluate the ethical implications of using horses for therapy
P5 Discuss types of natural horsemanship P6 Describe the ways in which horses are used for therapy reasons	M3 Evaluate how natural horsemanship influences the relationship between horse and human	

Pass	Merit	Distinction
LO4 Analyse the influence of horse and rider relationship on performance		D3 Evaluate the influence of horse and rider relationship on the outcome of performance in a selected discipline
P7 Discuss factors that could be affected in performance by a limited rider and horse relationship P8 Compare how different disciplines may require different forms of rider and horse relationship to ensure success	M4 Analyse the importance of a horse and rider relationship in ensuring success in a selected discipline	

Recommended Resources

Textbooks

DAVIS, H. (2015) *Horsemanship: Myth Magic and Mayhem: Volume 1*. 1st edn. South Carolina: Createspace Independent Publishing Platform.

DAVIS, H. (2015) *Horsemanship: The Revelations: Volume 2*. 1st edn. South Carolina: Createspace. Independent Publishing Platform.

FINE, A.H. (2006) *Handbook on Animal Assisted Therapy: Theoretical Foundations and Guidelines for Practice*. London: Academic Press Publications.

FORKUN, L. (2009) *Natural Horsemanship: Answering the What, Why, and How for ALL Disciplines*. 1st edn. Bloomington: AuthorHouse.

Journals

BRADLEY, K., BIVENS, A., LEINART, D. and KLONTZ, T. (2007) 'The Effectiveness of Equine-Assisted Experiential Therapy: Results of an Open Clinical Trial'. *Society and Animals*. vol. 15, no. 3, pp. 257–67.

CHRISTIAN, J.E. (2005) 'All Creatures Great and Small: Utilizing Equine-assisted Therapy to Treat Eating Disorders'. *J Psychol Christ*. vol. 24, no. 1, pp. 65–7.

KAISER, L., HELESKI, C., SIEGFORD, J. and SMITH, K. (2006) 'Stress-related Behaviors Among Horses Used in a Therapeutic Riding Program', *Journal of the American Veterinary Medical Association*. vol. 228, no. 1, pp. 39–45.

LENTINI, J.A. and KNOX, M. (2009) 'A Qualitative and Quantitative Review of Equine Facilitated'. *The Open Complementary Medicine Journal*. vol. 1, no. 1, pp. 51–7.

Links

This unit links to the following related units:

Unit 18: Equitation (Riding)

Unit 20: Equestrian Performance

Unit 37: Equitation II (Riding)

Unit 39: Advanced Equine Performance

Unit 20: Equestrian Performance

Unit code R/616/7847

Unit level 4

Credit value 15

Introduction

The effective management of horses' fitness is necessary to ensure optimum performance levels are achieved and maintained. This unit provides detailed knowledge of the physiological effect of exercise and training on the different equine body systems. An understanding of enhancing and maintaining fitness techniques and principles will also be covered, as this is vital for the production of successful performance horses.

Evaluating methods of training and fitness for the horse and studying the science of biomechanics, gait and conformation will develop students' appreciation of factors that may affect performance. This allows students to understand movement patterns and the rhythm of the horse gait, adding to the ability to alter or adjust movement through training.

Feeding horses' the correct nutrition also plays a huge part in performance success. Nutrition allows a horse to develop vital athleticism, concentration, agility and stamina to perform at its best. This knowledge is vital whether it's for a groom, rider, coach, analyst, behaviourist, breeder or, more specifically, performance analyst.

Overall, this unit enhances students' ability to support and develop an athletic horse from the inside out. Students will develop training and nutrition programmes that support and enhance horses' physiological systems, allowing the horse to work at its optimum performance level.

Learning Outcomes

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

- 1 Identify alterations to the horse's physiological systems during a select equestrian discipline
- 2 Describe the science of biomechanics, gait and conformation
- 3 Compare training and fitness programmes to support a horse to optimum performance in a selected discipline
- 4 Recognise the impact of nutrition on the outcome of performance.

Essential Content

LO1 Identify alterations to the horse's physiological systems during a select equestrian discipline

Alterations to the following systems in selected discipline:

Cardiovascular system

Respiratory system

Skeletal system

Muscular system

Circulatory system

Endocrine system.

LO2 Describe the science of biomechanics, gait and conformation

Biomechanics:

Variables

Standard units

Kinetic versus kinematic measurement.

Locomotion and gait analysis:

Analysis of movement of different horses

Breed comparison

Motion analysis systems

Parameters of the walk, trot, canter, gallop and jump.

Conformation:

Differentiation of conformation for different disciplines

Dynamic conformation

Static conformation analysis

Common conformation faults in certain disciplines and how to manage them to prevent injury.

LO3 Compare training and fitness programmes to support a horse to optimum performance in a selected discipline

Different regimes for getting horses fit:

Conventional training

Endurance training

Interval training

Speed training

Strength training

Acclimatisation training (preparation for different environments).

Phases of fitness programmes:

Periodisation

Performance goals

Skills training

Tapering.

Monitoring fitness:

Heart rate

Record-keeping

Fitness testing

Effects of training on oxygen uptake

Recovery rate.

Impact of altitude in improving fitness:

Speed

Time

Hydration

Muscle enzymes

Lactate

Hydration

Overtraining.

LO4 Recognise the impact of nutrition on the outcome of performance

Rations for performance horses

Feed types

Dietary manipulation to benefit the performance horse.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Identify alterations to the horse's physiological systems during a select equestrian discipline			LO1 LO2 D1 Critically analyse the impact of physiology alteration during exercise, evaluating the impact of biomechanics, gait and conformation on the mentioned systems
P1 Discuss the physiological systems within the equine body during exercise P2 Discuss the alterations to the physiological systems during training	M1 Analyse the impact of alterations to the physiological systems during a selected equestrian discipline		
LO2 Describe the science of biomechanics, gait and conformation			
P3 Explain definitions and variables of measurement in biomechanics P4 Discuss the importance of conformation on performance outcome	M2 Analyse the locomotion and gait of selected horses, making reference to impact on performance		
LO3 Compare training and fitness programmes to support a horse to optimum performance in a selected discipline			LO3 LO4 D2 Critically evaluate a training and nutrition programme for a horse in a selected discipline, making justification for improvement
P5 Compare different fitness regimes P6 Assess fitness programmes for horses competing at different levels in a range of disciplines	M3 Evaluate the need to monitor fitness to ensure improved performance and prevent overtraining		
LO4 Recognise the impact of nutrition on the outcome of performance.			
P7 Review rations for given performance horses P8 Explain how the diet can be manipulated to benefit the performance horse	M4 Perform comparative analysis of different feed samples from industry		

Recommended Resources

Textbooks

AUTY, I. (2008) *BHS Complete Manual of Horse and Stable Management*. London: Kenilworth Press Ltd.

BREGA, J. (1993) *Essential Equine Studies: Book Two: Health, Nutrition and Fitness*. London: J.A. Allen.

FRAPE, D. (2010) *Equine Nutrition and Feeding*. 4th edn. New Jersey: Wiley-Blackwell.

HEDGE, J. (1999) *Horse Conformation: Structure, Soundness and Performance*. 4th edn. Guilford: Lyons Press.

HINCHCLIFF, K.W., KANEPS, A.J. and GEOR, R.J. *Equine Exercise Physiology: The Science of Exercise in the Athletic Horse*. Edinburgh: Elsevier Saunders.

HODGSON, D.R., MCGOWAN, C. and MCKEEVER, K. (2013) *The Athletic Horse: Principles and Practice of Equine Sports Medicine*. 2nd edn. Missouri: Elsevier Saunders.

MARLIN, D.M. and NANKERVIS, K. (2002) *Equine Exercise Physiology*. Oxford: Blackwell Publishing.

WILLIAMS, J.M. and EVANS, D. (2015) *Training for Equestrian Performance*. Wageningen: Wageningen Press.

Links

This unit links to the following related units:

Unit 6: Animal Anatomy and Physiology

Unit 7: Animal Nutrition

Unit 18: Equitation (Riding)

Unit 37: Equitation II (Riding)

Unit 39: Advanced Equine Performance

Unit 21: Management Accounting

Unit code H/508/0489

Unit level 4

Credit value 15

Introduction

The overall aim of this unit is to introduce the fundamentals of management accounting which apply to the wider land-based business environment and the organisations which operate within that environment. Students will explore how management accounting uses financial data to aid planning decisions, and the monitoring and control of finance within organisations.

On successful completion of this unit, students will be in a position to present financial statements in a workplace context and be able to assist senior colleagues with financial business planning. In addition, students will have the fundamental knowledge and skills to progress to a higher level of study.

Learning Outcomes

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

- 1 Demonstrate an understanding of management accounting systems
- 2 Apply a range of management accounting techniques
- 3 Explain the use of planning tools used in management accounting
- 4 Compare ways in which organisations could use management accounting to respond to financial problems.

Essential Content

LO1 Demonstrate an understanding of management accounting systems

Introduction to management accounting:

What is management accounting? Definition of management accounting

What is a management accounting system?

Why is it important to integrate these within an organisation?

Explore the origin, role and principles of management accounting

The distinction between management and financial accounting.

Different types of management accounting systems:

Cost-accounting systems, inventory management systems, job-costing systems and price-optimising systems

Benefits of different types of systems.

Presenting financial information:

Why information should be relevant to the user, reliable, up-to-date and accurate

Why the way in which the information is presented must be understandable

Different types of managerial accounting reports.

LO2 Apply a range of management accounting techniques

Microeconomic techniques:

What is meant by cost? Different costs and cost analysis

Cost-volume profit, flexible budgeting and cost variances

Applying absorption and marginal costing.

Product costings:

Fixed and variable costs, cost allocation

Normal and standard costing, activity-based costing and the role of costing in setting price.

Cost of inventory:

Definition and meaning of inventory costs and different types of inventory costs

The benefits of reducing inventory costs to an organisation

Valuation methods

Cost variances

Overhead costs.

LO3 Explain the use of planning tools used in management accounting

Using budgets for planning and control:

Preparing a budget

Different types of budgets e.g. capital and operating

Alternative methods of budgeting

Behavioural implications of budgets.

Pricing:

Pricing strategies

How do competitors determine their prices?

Supply and demand considerations.

Common costing systems:

Actual costing, normal costing and standard costing systems

How cost systems differ depending on the costing activity: job costing, process costing, batch costing and contract costing.

Strategic planning:

Applying PEST, SWOT, balance scorecard or Porter's Five Forces analysis to the financial position of an organisation.

LO4 Compare ways in which organisations could use management accounting to respond to financial problems

Identifying financial problems:

Using benchmarks, key performance indicators (financial and non-financial) and budgetary targets to identify variances and problems.

Financial governance:

Definitions of financial governance, and how this can be used to pre-empt or prevent financial problems

Using financial governance to monitor strategy.

Management accounting skill sets:

What are the characteristics of an effective management accountant?

How can these skills be used to prevent and/or deal with problems?

Effective strategies and systems:

The development of strategies and systems which require effective and timely reporting, full disclosure of financial positions and are responsibly owned and governed.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Demonstrate an understanding of management accounting systems		
P1 Explain management accounting and give the essential requirements of different types of management accounting systems P2 Explain different methods used for management accounting reporting	M1 Evaluate the benefits of management accounting systems and their application within an organisational context	D1 Critically evaluate how management accounting systems and management accounting reporting is integrated within organisational processes
LO2 Apply a range of management accounting techniques		
P3 Calculate costs using appropriate techniques of cost analysis to prepare an income statement using marginal and absorption costs	M2 Accurately apply a range of management accounting techniques and produce appropriate financial reporting documents	D2 Produce financial reports that accurately apply and interpret data for a range of business activities
LO3 Explain the use of planning tools used in management accounting		
P4 Explain the advantages and disadvantages of different types of planning tools used for budgetary control	M3 Analyse the use of different planning tools and their application for preparing and forecasting budgets	LO3 LO4 D3 Evaluate how planning tools for accounting respond appropriately to solving financial problems and lead organisations to sustainable success
LO4 Compare ways in which organisations could use management accounting to respond to financial problems		
P5 Compare how organisations are adapting management accounting systems to respond to financial problems	M4 Analyse how, in responding to financial problems, management accounting can lead organisations to sustainable success	

Recommended Resources

Textbooks

DRURY, C. (2015) *Management and Cost Accounting*. 9th edn. Boston: Cengage Learning.

EDMONDS, T. and OLDS, P. (2013) *Fundamental Managerial Accounting Concepts*. 7th edn. Maidenhead: McGraw-Hill.

HORNGREN, C., SUNDEN, G., STRATTON, W., BURGSTALLER, D. and SCHATZBERG, J. (2013) *Introduction to Management Accounting*. Global edn. Harlow: Pearson.

SEAL, W. et al. (2014) *Management Accounting*. 5th edn. Maidenhead: McGraw-Hill.

Links

This unit links to the following related units:

Unit 2: Business and the Business Environment

Unit 30: Advanced Management Accounting

Unit 22: Teaching in a Specialist Subject

Unit code Y/616/7848

Unit level 4

Credit value 15

Introduction

Working in the animal and agricultural industries frequently includes delivery of material designed to educate others about the welfare of animals. This can include teaching in further education (FE), working in the animal entertainment sector or owning a business. Knowledge of the principles and practices of teaching is fundamental to ensure sufficient learning. This unit provides an introduction to the key principles of teaching and gives students the opportunity to put what they have learned into practice.

Students will be provided with the opportunity to explore a range of learning theories used within teaching and gain an understanding of the ways in which lessons are structured. They will explore a range of delivery methods, including inclusive approaches to activities within a specialist area. Students will also be able to identify issues and management strategies relating to equality and diversity as well as behavioural management.

This unit also provides the opportunity to explore the importance of using a range of assessment techniques, as well as managing and developing resources to inspire. In addition, students will have the chance to evaluate their own approaches to teaching, enabling them to tailor this to a specialist area.

The underlying principle of the unit is to give students the opportunity to develop confidence in developing and delivering educational material to pupils within the animal management sector. During their careers, students will take on roles that may require professional evaluation and working effectively with others. Students will also gain skills in dealing with issues arising out of equality and diversity, along with the management of behaviour, which forms an integral part of teaching a specialist subject.

Learning Outcomes

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

- 1 Identify the application of the theories and principles of education and training in a specialist subject
- 2 Develop a range of resources to enable inclusive learning
- 3 Demonstrate how to plan, design and construct a lesson
- 4 Evaluate delivery techniques and improve activities.

Essential Content

LO1 Identify the application of the theories and principles of education and training in a specialist subject

Curriculum:

Educational/training context in specialist subject (FE College, HE, sixth form, work-based training, school visits, entertainment industry, charity work)

Delivery (knowledge-based, tutor-centred, student-centred, lecture style, research-based).

Principles of learning:

Maslow's hierarchy of needs

Behaviourists, cognitivists and humanists e.g. Piaget, Romanowski, Kolb, Pavlov

VAK

Inclusive learning

Bloom's taxonomy.

LO2 Develop a range of resources to enable inclusive learning

Resource design and management:

Differentiation

Starters

Plenaries

Evaluation of own resources.

Resources and activities to promote learning:

VLE e.g. Blackboard, Moodle

ICT

Handouts

Case studies

Guest speakers

Educational visits

Role play

Peer working/support.

Equality and diversity:

Promoting equality

Challenging discriminatory behaviour

Legislation

Incorporating equality and diversity in a range of lessons.

LO3 Demonstrate how to plan, design and construct a lesson

Session planning:

Aims and objectives

Lesson planning e.g. pace of lesson, stages, timing, variety

Schemes of Work

Time management techniques.

Assessment techniques:

Initial assessment

Formative assessment

Summative assessment

Peer assessment

Ways to incorporate assessment in lessons

Feedback techniques.

LO4 Evaluate delivery techniques and improve activities.

Strength and development:

Use of reflective journals in evaluating own approaches

Reflection in action/reflection on action

Kolb's learning cycle.

Sharing good practice:

Team meetings, staff development days

Using feedback from others

The importance of continuing professional development

Liaising with others, experience in workplace/industry.

The observation process:

People who carry out observations in specialist areas

The importance of observations

Methods of observation

Formal/informal observations

Feedback process.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Identify the application of the theories and principles of education and training in a specialist subject			LO1 LO2 D1 Critically evaluate the planning and delivery process and appropriate resources applied
P1 Explain the various ways teaching can be implemented in own specialist subject area P2 Describe a range of theories and philosophies used within teaching and learning, giving specific examples	M1 Analyse the different methods of delivery of education within own specialist subject area, giving both advantages and disadvantages		
LO2 Develop a range of resources to enable inclusive learning			
P3 Select and produce a range of resources, including new and emerging technologies, for a minimum of two sessions in a specialist subject area P4 Identify, use and evaluate appropriate resources for support in promoting equality and diversity	M2 Analyse the effectiveness of specific resources, reviewing both advantages and disadvantages		
LO3 Demonstrate how to plan, design and construct a lesson			LO3 LO4 D2 Provide a critical evaluation and reflection of your planning and delivery of sessions
P5 Plan a detailed Scheme of Work for a specialist subject area P6 Provide evidence of the planning and delivery of a minimum of two different sessions	M3 Evaluate the use of differentiation within the planning and delivery of a minimum of two sessions		

Pass	Merit	Distinction
LO4 Evaluate delivery techniques and improve activities		
<p>P7 Reflect on own approaches, strengths and development needs in relation to own specialist subject area</p> <p>P8 Review the various ways in which sharing good practice can be beneficial to improve teaching and learning, giving specific examples where possible</p>	<p>M4 Analyse the positive and negative outcomes of lesson planning and delivery, supported by specific examples</p>	

Recommended Resources

Textbooks

CURZON, L.B. (2013) *Teaching in Further Education: An Outline of Principles and Practice*. London: Bloomsbury Academic.

GRAVELLS, A. (2012) *Preparing to Teach in the Lifelong Learning Sector*. Exeter: Learning Matters.

PETTY, G. (2014) *Teaching Today: A Practical Guide*. Oxford: Oxford University Press.

PETTY, G. (2009) *Evidence-Based Teaching: A Practical Approach*. Cheltenham: Nelson Thornes.

Web

www.educationworld.com	Education world (General reference)
http://geoffpetty.com	Geoff Petty (General reference)
www.tes.com	Tes (General reference)

Links

This unit links to the following related units:

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

Unit 24: Research Project (Pearson-set)

Unit 23: 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 which 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, 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:

- 1 Analyse the structure and function of animal cells, organelles and cellular transport mechanisms
- 2 Assess the interrelationships between the organisation of cells, tissues and organ systems within the animal body
- 3 Determine how the internal environment of the animal body is maintained through the mechanisms of homeostasis
- 4 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 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. CO₂, 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

Pass	Merit	Distinction
LO1 Analyse the structure and function of animal cells, organelles and cellular transport mechanisms		LO1 LO2 D1 Critically evaluate how the animal body integrates cells and tissues into organs to achieve efficiently functioning systems
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	M1 Critically analyse the function of the cellular components and transport mechanisms in maintaining the operation of prokaryotic and eukaryotic cells	
LO2 Assess the interrelationships between the organisation of cells, tissues and organs systems within the animal body		
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	M2 Appraise the efficacy of the integration of tissues into organ systems within the animal body	
LO3 Determine how the internal environment of the body is maintained through the mechanisms of homeostasis		D2 Provide critical evaluation of the efficacy of homeostatic mechanisms in maintaining the internal environment of the animal body
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 include the mechanisms of action	M3 Analyse the impact of homeostatic imbalance in body systems on the outcomes of endpoint outcomes	

Pass	Merit	Distinction
LO4 Demonstrate, through practical investigations, the principles and processes of biological concepts		D3 Critically evaluate the practical work undertaken to include recommendations for further investigative activities
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	

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 edn. Harlow: Pearson.

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

Web

www.biologymad.com	Biology Mad Additional Resources/Useful websites (General reference)
www.msdivetmanual.com	MSD Manual (Merck) Veterinary Content/Resources (Research/General reference)

Links

This unit links to the following related units:

Unit 6: Animal Anatomy and Physiology

Unit 27: Biochemistry and Medical Microbiology

Unit 33: Animal Breeding and Genetics

Unit 24: Research Project (Pearson-set)

Unit code	R/616/7850
Unit type	Core
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 business 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, develop research aims, objectives and outcomes, and 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:

- 1 Examine appropriate research methodologies and approaches as part of the research process
- 2 Conduct and analyse research relevant for a land-based business research project
- 3 Communicate the outcomes of a research project to identified stakeholders
- 4 Reflect on the application of research methodologies and concepts.

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

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Examine appropriate research methodologies and approaches as part of the research process		LO1 LO2 D1 Critically evaluate research methodologies and processes in application to a business research project to justify chosen research methods and analysis.
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.	M1 Evaluate different research approaches and methodology and make justifications for the choice of methods selected, based on philosophical/theoretical frameworks.	
LO2 Conduct and analyse research relevant for a land-based business research project		
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.	M2 Discuss merits, limitations and pitfalls of approaches to data collection and analysis.	
LO3 Communicate the outcomes of a research project to identified stakeholders		D2 Communicate critical analysis of the outcomes and make valid, justified recommendations.
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.	

Pass	Merit	Distinction
LO4 Reflect on the application of research methodologies and concepts.		D3 Demonstrate reflection and engagement in the resource process, leading to recommended actions for future improvement.
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.	

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 edn. London: SAGE.

SAUNDERS, M., LEWIS, P. and THORNHILL, A. (2012) *Research Methods for Business Students*. 6th edn. Harlow: Pearson.

Links

This unit links to the following related units:

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

Unit 25: Anthrozoology

Unit code	Y/616/7851
Unit level	5
Credit value	15

Introduction

Anthrozoology is an emerging area of interest within the animal management industry, with increased consciousness of the importance of understanding the associations between humans and animals in differing contexts, from companionship, exhibition, agriculture and sporting disciplines, to situations where the human-animal interaction can be utilised for mutual benefit. Knowledge gained from this unit enables a deeper understanding of the human-animal dyad which is required for a range of positions within the animal management industry, such as consultancy, animal welfare organisations and lecturing.

This unit examines the human-animal interaction, exploring the variety of ways in which animals are utilised in human society and how interactions can be exploited for a number of purposes, including therapy animals. It explores the wide range of human-animal interactions that currently exist, both nationally and internationally, and discusses and evaluates different aspects of these.

A variety of assessment methods and criteria employed within this unit develop a range of skills required for the animal management industry. Students will develop skills in terms of evaluation and critical analysis in both theoretical and practical settings. In addition, the nature of anthrozoology naturally requires students to develop enhanced research skills and scientific paper analysis.

Learning Outcomes

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

- 1 Demonstrate an awareness of diverse facets of human-animal interactions
- 2 Evaluate the practice of animals in a wide range of human therapies and review ways in which animals can assist alternative areas of development
- 3 Interpret general patterns of behaviour, psychological functions and experience in relation to anthrozoology
- 4 Analyse emerging areas of anthrozoology in relation to human exploitation and animal welfare.

Essential Content

LO1 Demonstrate an awareness of diverse facets of human-animal interactions

Human-animal interaction

Facets of human-animal interaction:

Uses of animals across the world

Animal-assisted therapy

Public-service animals

Animals for entertainment

Conservation

Animal testing.

National uses of animals

International uses of animals

LO2 Evaluate the practice of animals in a wide range of human therapies and review ways in which animals can assist alternative areas of development

Human therapy:

Guide dogs

PAT dogs

Therapy llamas

The use of animals within schools.

Human development

Animal development

Alternative therapies

LO3 Interpret general patterns of behaviour, psychological functions and experience in relation to anthrozoology

Anthrozoological testing

Rehabilitation

Mental health

Human health

LO4 Analyse emerging areas of anthrozoology in relation to human exploitation and animal welfare.

Welfare issues:

Conservation

Animals used within cooking

Animals used within testing.

Welfare societies

National and international organisations:

WWF

IUCN

RSPCA

DEFRA

BIAZA

EAZA

WAZA.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Demonstrate an awareness of diverse facets of human-animal interactions		LO1 LO2 D1 Critically evaluate the human-animal interaction, highlighting the advantages and disadvantages to human and non-human species
P1 Investigate a range of facets of the human-animal interaction P2 Compare the benefits provided to humans as a result of the human-animal interaction	M1 Discuss a range of human-animal interactions in a national and international context	
LO2 Evaluate the practice of animals in a wide range of human therapies and review ways in which animals can assist alternative areas of development		
P3 Assess the use of animals in a range of human therapies	M2 Analyse the methods in which animals are utilised to aid human development processes	
LO3 Interpret general patterns of behaviour, psychological functions and experience in relation to anthrozoology		D2 Illustrate and evaluate qualitative and quantitative anthrozoological data, highlighting the impact of animals on human health and psychology
P4 Research and interpret the impact of animals on human biological functioning P5 Explore methods of measuring and monitoring benefits of the human-animal interaction	M3 Discuss potential positive psychological impacts of the human-animal interaction	
LO4 Analyse emerging areas of anthrozoology in relation to human exploitation and animal welfare		
P6 Select and analyse an emerging human-animal conflict with regard to animal welfare P7 Investigate the influences of national and international organisations on the selected human-animal conflict	M4 Analyse animal welfare legislation in regard to a selected human-animal conflict	D3 Critically evaluate the exploitation of animals internationally, with specific emphasis on negative animal welfare impacts

Recommended Resources

Textbooks

ALTSCHILLER, D. (2011) *Animal-Assisted Therapy*. Westport: Greenwood.

FINE, A.H. (2006) *Handbook on Animal-Assisted Therapy: Theoretical Foundation and Guidelines for Practice*. London: Academic Press.

FREUD, L.S. and McCUNE, S. (2016) *The Social Neuroscience of Human-Animal Interaction*. London: Academic Press.

HERZOG, H. (2010) *Some We Love, Some We Hate, Some We Eat: Why It's So Hard to Think Straight About Animals*. New York: HaperCollins.

WEBSTER, J. (2011) *Management and Welfare of Farm Animals: The UFAW Farm Handbook (UFAW Animal Welfare)*. 5th edn. New Jersey: Wiley-Blackwell.

Web

www.apa-hai.org	Human-Animal Interaction (General reference)
www.bekindexhibit.org	Be kind: A Visual History of Humane Education Background: About Human Education (Timeline)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 4: Animal Behaviour in Society

Unit 36: Ethics and Consultation

Unit 26: Evolution and Adaptations

Unit code H/616/7853

Unit level 5

Credit value 15

Introduction

An understanding of the principles and mechanics of evolution underpins all of animal science, as well as the wider biological sciences. Through evolutionary history, the animal kingdom has diversified into the variety of forms found today. Human involvement in the artificial selection of traits has led to the domestication of animal species. Through studying this unit, students will gain an understanding of the key theories and models of natural and artificial selection, and their applications.

Completing this unit will provide students insights into the diversity of animals' physiological systems, giving them knowledge which they can apply in any number of working contexts, from managing the health of livestock animals to increasing the performance of sport animals. Beyond physiology, this unit will also let students explore behavioural adaptations exhibited throughout the animal kingdom, and learn about the processes by which they developed. Gaining an understanding of animals' evolution allows students to best interact with and manage existing species, whether in the wild or captivity.

In this unit, students will develop skills in technical and scientific analysis, gaining insight into the use of models and theories to explain aspects of animals. In practice, the content of this unit will help students progressing into work in the scientific or veterinary fields, analysing and managing aspects of animal bodies. The knowledge and skills gained in this unit will have wider implications for working in animal management, such as the application to commercial animal breeding success or managing the genetic health of a wildlife population.

Learning Outcomes

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

- 1 Explain the principles of evolutionary theories and models
- 2 Examine physiological adaptations which have evolved in animal bodies
- 3 Examine behavioural and ecological adaptations which have evolved in animals
- 4 Evaluate the impact of artificial selection on physiological features of domestic animals.

Essential Content

LO1 Explain the principles of evolutionary theories and models

Natural history:

Origins and history of life on Earth

Key milestones in the development of the animal kingdom.

Taxonomy and classification of groups of organisms

History of evolutionary science:

Pre- and post-Darwinian theory

Developments and important discoveries

Key scientists and theorists

Comparing theories.

Natural selection:

Selection pressures

Sexual selection and reproduction

Environmental pressures

Adaptation to environment

Fitness

Competition.

Genetics and inheritance:

Genotype

Phenotype

Definitions in molecular genetics

Replication

Mutation

Genetic drift

Gene flow

Mendelian principles.

LO2 **Examine physiological adaptations which have evolved in animal bodies**

Comparative biology of differing taxonomic groups

Examining anatomical systems' impact on species' fitness in natural habitats:

Morphology

Metabolism

Digestion

Respiration

Temperature regulation

Homeostasis

Reproduction

Locomotion

Cardiovascular system

Nervous system

Musculoskeletal system

Endocrine system.

LO3 **Examine behavioural and ecological adaptations which have evolved in animals**

Comparative examination of characteristics of animal groups:

Life history

Migration

Sociality

Activity cycles.

Interspecific connections:

Symbiotic relationships

Coevolution

Mutualism

Parasitism.

Intraspecific connections:

Reproductive strategies

Predation and predator avoidance.

LO4 Evaluate the impact of artificial selection on physiological features of domestic animals

Principles of artificial selection

Processes and technology in artificial selection

Domestication:

Preadaptation

Levels of domesticity

Purpose and functions.

Common characteristics in domestic breeds:

Anatomical features

Behavioural biology

Strength

Agility

Size

Yield.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Explain the principles of evolutionary theories and models		LO1 LO2 LO3 D1 Critically evaluate scientific models to perform an in-depth analysis of the physiological and behavioural adaptations which have evolved in an animal species, highlighting milestones in the species' evolution
P1 Explain the process of natural selection P2 Compare models of evolutionary theory	M1 Analyse the selection pressures resulting in the development of an animal species	
LO2 Examine physiological adaptations which have evolved in animal bodies		
P3 Assess the necessity of anatomical systems for the survival of animals in their natural habitat P4 Assess how selection pressures have contributed to changes in a species' anatomical systems over time	M2 Analyse how a specific environmental factor has contributed to the development of a specific anatomical system	
LO3 Examine behavioural and ecological adaptations which have evolved in animals		
P5 Explain how intraspecific behaviour has developed as a result of selection pressure P6 Explain how interspecific behaviour has developed as a result of selection pressure	M3 Analyse how the evolution of a species' behavioural ecology has promoted its survival	
LO4 Evaluate the impact of artificial selection on physiological features of domestic animals		D2 Analyse, in-depth, the factors contributing to the development of an animal breed over time – the human requirements, the characteristics selected for development and the impact on the species
P7 Discuss the history and development of animals' function in human society P8 Assess the impact of artificial selection of physiological characteristics to the development of a modern breed of animal	M4 Evaluate artificial selection's benefits for animal species	

Recommended Resources

Textbooks

AKERS, R.M. and DENBOW, D.B. (2013) *Anatomy & Physiology of Domestic Animals*. 2nd edn. New Jersey: Wiley.

ANDERSON, M., HILL, R.W. and WYSE, G.A. (2016) *Animal Physiology*. 4th edn. Sunderland MA: Sinaur Associates.

BERENBAUM, M., HELLER, H.C., HILLIS, D.M. and SADAVA, D.E. (2012) *Life: The Science of Biology*. 10th edn. New York: W.H. Freeman.

CARROLL, S., DOEBLEY, J., GRIFFITHS, A.J.F. and WESSLER, S.R. (2015) *An Introduction to Genetic Analysis*. 11th edn. New York: W.H. Freeman.

DAWKINS, R. (2006) *The Selfish Gene*. 3rd edn. Oxford: Oxford University Press.

FRANDSON, R.D., WILKE, W.L. and FAILS, A.D. (2013) *Anatomy & Physiology of Farm Animals*. 7th edn. Blackwell.

FUTUYMA, D.J. (2006) *Evolutionary Biology*. 3rd edn. Sunderland MA: Sinaur Associates.

Web

<http://darwin-online.org.uk>

Darwin Online

Repository of Charles Darwin's publications

(General reference)

www.omicsonline.org

OMICs Publishing

Database of open access scientific journals

(Research)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 4: Animal Behaviour in Society

Unit 6: Animal Anatomy and Physiology

Unit 7: Animal Nutrition

Unit 23: Biological Principles

Unit 33: Animal Breeding and Genetics

Unit 27: Biochemistry and Medical Microbiology

Unit code K/616/7854

Unit level 5

Credit value 15

Introduction

The aim of this unit is to develop underpinning knowledge in biochemistry and medical microbiology, and practical skills which can be applied throughout the animal management sector.

Biochemistry is part of the underpinning knowledge of animal nutrition and for students wishing to follow the animal nutrition career route. It is also part of developing understanding of biological concepts and thus builds on the *Unit 23: Biological Principles* and links closely with *Unit 28: Chemistry for Biologists*. The practice of microbiological sampling is essential for the quick and efficient diagnosis of disease in animals and a key practical skill for those working in veterinary surgeries or laboratories. This links closely with the *Animal Health and Welfare*, *Veterinary Practice Management* and *Animal Nursing* units.

In biochemistry, students will explore the structure and function of the micro molecules which contribute to the biochemical function of the related macromolecules. The medical microbiology is essentially practically based with underpinning knowledge of the range of methods of specimen collection and structure of microorganisms reviewed. The concept of minimum inhibitory concentration of antibiotics and the role of antibiotics in treatment of disease will be addressed both in theory and practice.

Students will have the opportunity to plan and execute practical investigations to isolate and identify microorganisms, developing and enhancing essential laboratory skills necessary for animal health monitoring. Assessment strategies will include written reports and poster work, as well as assessed practical investigations.

Learning Outcomes

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

- 1 Explore the biochemistry of biological macromolecules and their constituent micro molecules
- 2 Review methods of specimen collection from animals
- 3 Demonstrate the isolation and identification of pathogens
- 4 Determine antibiotic sensitivity in bacteria.

Essential Content

LO1 Explore the biochemistry of biological macromolecules and their constituent micro molecules

Proteins:

Amino acids (chemical structure, R group classification, acid/base properties, isoelectric point, D and L classifications and essential amino acids)

Proteins (structure to include primary, secondary, tertiary and quaternary, properties of globular and fibrous proteins).

Saccharides:

Monosaccharides (chemical structure, reducing properties, reactivity of glycosidic and hydroxyl groups, a and b nomenclature and optical isomerism)

Polysaccharides (glycogen, starch, cellulose, effect of a glycosidic links on shape, effect of branching on structural polysaccharides, enzymic hydrolysis in energy production).

Lipids:

Fatty acids (classification, saturated, unsaturated and essential fatty acids)

Triglycerides and phospholipids (saturated:unsaturated ratio in cell membrane fluidity, energy production and storage).

Nucleic acids:

Nucleotides, nucleosides (nitrogen bases, sugar residue attachment)

DNA (structure – double helix, function, importance of hydrogen bonding)

RNA (types and roles).

LO2 Review methods of specimen collection from animals

Types of specimen required:

Blood, urine, faeces, tissue fluid, skin samples, biopsies.

Factors affecting the choice of sampling method:

Health and Safety

PPE

Specimen type and expected pathogen lability

Quality control and management

Risk of cross contamination

Records required.

Transport of samples:

Collection device

Container design

Storage of samples prior to delivery to laboratories

Transport medium.

LO3 Demonstrate the isolation and identification of pathogens

Structure of relevant pathogenic organisms:

Bacteria: taxonomic classification (cocci, bacilli, spirochaetales, chlamydiae, rickettsiae, mycoplasmae), gram-positive and gram-negative, structure of generalised bacterium, replication methods

Viruses: orf, picornavirus – encephalomyocarditis, paramyxovirus, rabies, structure of virus types, replication methods

Fungi: Aspergillus, Candida, Dermatophytes, structure of yeasts and fungi, replication methods.

Isolation of pathogens:

Techniques for the isolation of specimens (bacteria, viruses and fungi)

Growth conditions

Microscopy

Aseptic technique (PPE)

Selective and differential media (composition of media)

Primary identification (appearance of colonies, microscopic observation, gram stain and other staining methods).

Identification of pathogens:

Testing systems (biochemical, serological, coagulase, DNA testing, molecular)

Test kits (API-20E, OXOID Strep)

Clinical findings and reporting.

LO4 **Determine antibiotic sensitivity in bacteria.**

Methods of identifying antibiotic sensitivity:

Gram-positive and gram-negative bacteria

Advantages and disadvantages of disc diffusion

Consideration of treatment already undertaken (synergistic and antagonistic effects).

Minimum inhibitory concentration:

Broth dilution

Agar diffusion (E-test).

Antibiotic mode of action:

Aminoglycoside

Tetracycline

Sulphonamide

Trimethoprim

Rifampicin.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explore the biochemistry of biological macromolecules and their constituent micro molecules			D1 Evaluate the biochemical importance of proteins, lipids, polysaccharides and nucleic acids in the living organism
P1 Discuss the structure, properties and activity of amino acids, monosaccharides, fatty acids, nucleotides and nucleosides	P2 Discuss the biochemical functions of proteins, polysaccharides, lipids and nucleic acids	M1 Critically analyse how the structures of the micro molecules assist the functions of the macromolecules	
LO2 Review methods of specimen collection from animals			D2 Evaluate and justify the processes and procedures associated with sampling for pathogens in animals
P3 Examine the collection and transport mechanisms available for sampling the range of possible specimens from animals	P4 Discuss the factors affecting the choices of sampling methods available to a veterinary surgery	M2 Appraise the efficacy of sampling methods available, in relation to a range of specimens.	
LO3 Demonstrate the isolation and identification of pathogens			D3 Critically evaluate the methods of isolation and identification used, and recommend improvements
P5 Compare the structures of micro-organisms relevant to animal health	P6 Demonstrate the isolation and identification of a range of micro-organisms using appropriate techniques and methods	M3 Analyse the accuracy and validity of the findings of the isolation and identification processes undertaken	

Pass	Merit	Distinction
LO4 Determine antibiotic sensitivity in bacteria		D4 Critically evaluate the methods available to determine the MIC of antibiotics
<p>P7 Discuss the mode of action of a range of antibiotics, and the methods available to identify antibiotic sensitivity of bacteria</p> <p>P8 Investigate, through planned practical activities, the minimum inhibitory concentration (MIC), of antibiotics on both gram-positive and gram-negative bacteria</p>	M4 Analyse the importance of determining the MIC of antibiotics in the treatment of animals	

Recommended Resources

Textbooks

BERG, J.M. et al. (2015) *Biochemistry*. 8th edn. New York: W.H. Freeman.

LAMMERT, J.M. (2006) *Techniques for Microbiology: A Student Handbook*. Harlow: Pearson.

MOORE, J.T. and Langley, H. R. (2011) *Biochemistry for Dummies*. 2nd edn. New Jersey: Wiley.

TORTORA, G.J., FUNKE, B.R. and CASE, C.L. (2016) *Microbiology: An Introduction*. 12th edn. Harlow: Pearson.

Web

www.boundless.com	Boundless Biology Textbooks (General reference)
www.ehs.wisc.edu	Zoonotic Diseases PDF (Research/General reference)
www.iaszoology.com	IAS Zoology Bacterial Diseases (Research)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 7: Animal Nutrition

Unit 9: Veterinary Practice Management

Unit 10: Animal Nursing

Unit 28: Chemistry for Biologists

Unit 28: Chemistry for Biologists

Unit code	M/616/7855
Unit level	5
Credit value	15

Introduction

The aim of this unit is to develop underpinning knowledge in chemistry and relevant practical skills which can be applied throughout the animal management sector. It is anticipated that much of the learning will be achieved through the practical application of the relevant theories, thus developing industry-standard practical skills which will support employment in laboratories and other settings.

Chemistry is part of the underpinning knowledge of animal nutrition and for students wishing to follow the animal nutrition career route. It is also part of developing more complex chemical knowledge and, as such, links closely with *Unit 27: Biochemistry and Medical Microbiology*.

In this unit, students will explore the various classes of organic compounds and apply practical investigations to analyse the properties of these. Bonding and molecular properties are an important part of biological study and will assist students with the understanding of cellular processes in *Biochemistry and Medical Microbiology* and *Animal Breeding and Genetics*. Practical investigation of rates of reactions of enzymes and other relevant examples will form the basis of assessment for this outcome. The study of thermodynamic quantities and equilibrium theory and practice will also assist students in applying concepts such as redox reactions to biological functions, and understanding how acid and pH balance is essential to the correct functioning of the cell.

Students will have the opportunity to plan and execute practical investigations to see the application of the theories and to develop the industry-standard skills necessary for research and employment. Assessment strategies will include written reports and poster work, as well as assessed practical investigations.

Learning Outcomes

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

- 1 Investigate the chemical behaviour of organic compounds
- 2 Assess how chemical bonding affects the properties of molecules
- 3 Review the feasibility of reactions to thermodynamic quantities
- 4 Investigate the features of equilibrium forces.

Essential Content

LO1 Investigate the chemical behaviour of organic compounds

Classes of organic compounds:

Alkenes, alkanes, aldehydes, alcohols, haloalkanes, aldehydes, ketones, carboxylic acids, esters, amines, amides

IUPAC (International Union of Pure and Applied Chemists) system.

Important reactions of organic compounds:

Alkanes (combustion, free radical substitution)

Alkenes (addition: Br₂, HBr, H₂, H₂O)

Alcohols (oxidation, esterification)

Haloalkanes (substitution)

Carboxylic acids (reaction with base, esterification)

Esters (hydrolysis to acid and alcohol)

Amines (bases).

Isomerism:

Structural (chain, positional, functional group)

Stereoisomerism (geometric)

Optical

Biological examples.

LO2 Assess how chemical bonding affects the properties of molecules

Chemical bonding:

Spd notation

Types of bonding (ionic, covalent, polar covalent, metallic)

Hydrostatic interactions

Intermolecular and Van der Waals forces

Hydrogen bonding

Dipole-dipole interactions.

Physical properties:

Melting and boiling points

Electrical conductivity

Surface tension

Solubility.

Factors associated with the rate of chemical reactions and their effects:

Factors (concentration, particle size and number, temperature, catalyst)

Effects (collisions per second, surface area, reaction profile, activation energy-levels with and without catalyst)

Distribution curves (at given temperature, with variation of temperature)

Enzymes as catalysts

Biological examples of reactions.

LO3 Review the feasibility of reactions to thermodynamic quantities

Thermodynamic quantities:

Enthalpy (Hess's law, exothermic, endothermic, combustion, formation, dissociation, mean bond, solution, lattice, hydration, making and breaking bonds)

Thermodynamic tables

Entropy, Gibbs energy

Standard changes occurring (enthalpy, entropy, Gibbs energy)

Conditions for equilibrium, and when products or reactants predominate

Exergonic, endergonic.

Oxidation and reduction:

Oxidation as loss of electrons

Reduction as gaining electrons

Overall and half redox equations

Balancing overall equations in terms of electron numbers

Oxidation numbers

Biological examples of redox half cells (NAD⁺, NADH).

LO4 Investigate the features of equilibrium forces

Equilibrium constants:

Rates of forward and reverse reactions

Dynamic equilibrium

Concentration and products at equilibrium (osmosis, partition, weak acid dissociation)

Calculation of K_c from concentration of reactants and products at equilibrium

Magnitude of equilibrium constant

Changes in conditions (concentration, pressure, pressure and reactions involving gases, stoichiometric number, temperature, catalyst, Le Chatelier's principle).

pH and acid dissociation constant:

Bronsted-Lowry theory

pH of acidic solutions, neutral and alkaline solutions

Strong and weak acids

Calculate the pH of weak acids

Henderson-Hasselbalch equation

Buffer solutions and their application

Ionisation of amino acids in solutions of different pH.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Investigate the chemical behaviour of organic compounds		D1 Evaluate the properties of the organic compounds
P1 Discuss the various forms of isomerism using biological examples P2 Assess the properties of the classes of organic compounds to functional groups	M1 Critically analyse the role of isomerism in biology	
LO2 Assess how chemical bonding affects the properties of molecules		D2 Critically evaluate how chemical bonding affects the reactivity of compounds
P3 Assess how chemical bonding affects the physical properties of molecules P4 Discuss the factors affecting rates of reaction and how these affect the rates of reaction	M2 Analyse data to explain how enzymes function as biological catalysts	
LO3 Review the feasibility of reactions to thermodynamic quantities		D3 Critically evaluate the role of redox reactions within biological reactions
P5 Appraise thermodynamic quantities in terms of the feasibility of reactions P6 Discuss the processes of oxidation and reduction reactions	M3 Analyse the importance of entropy and enthalpy in biology	
LO4 Investigate the features of equilibrium forces		D4 Critically evaluate the roles of equilibrium and pH in cellular activity
P7 Demonstrate equilibrium constants using biological examples and the calculation of K_c . P8 Discuss the concept of pH and the acid dissociation constant	M4 Analyse how equilibrium favours weak acids	

Recommended Resources

Textbooks

BERG, J.M., TYMOCZKO, J.L. and STRYER, L. (2011) *Biochemistry: International Edition*. 7th edn. London: Palgrave MacMillan.

PRICE, N.C., DWEK, R.A. and RATCLIFFE, R.G. (2002) *Principles and Problems in Physical Chemistry for Biochemists*. Oxford: Oxford University Press.

SACKHEIM, G.I. (2007) *An Introduction to Chemistry for Biology Students*. 9th edn. Harlow: Pearson.

Web

https://iupac.org	International Union of Pure and Applied Chemistry Organic Chemistry/Nomenclature (General reference/Research)
http://www.rsc.org	Royal Society of Chemists Practical work (General reference)
www.wiley.com	Essential Biochemistry Prerequisite concepts (General reference)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 7: Animal Nutrition

Unit 27: Biochemistry and Medical Microbiology

Unit 33: Animal Breeding and Genetics

Unit 29:

Advanced Patient Care

Unit code T/616/7856

Unit level 5

Credit value 15

Introduction

This unit explores the needs of advanced nursing cases, including medical cases, recumbent patients, infectious patients requiring barrier nursing and patients requiring fluid therapy. Students will be able to discuss multiple factors which influence patient management in non-routine inpatients to optimise their health and welfare, and to recognise how these influence broader practice management. Design of advanced nursing care plans, including the role of the different members of the veterinary team within these, will be undertaken and the benefits and limitations of care plans will be evaluated.

The methods and modes of communication that can occur within a veterinary practice between colleagues and with clients will be evaluated. Students will learn to recognise their own preferred communication style and to reflect on how this influences their interactions with colleagues. Advantages and disadvantages of verbal and non-verbal communication methods are also analysed alongside the influence of religion, socio-economics and culture upon communication.

Students will develop the skills to be able to admit and discharge surgical cases and discuss inpatient progress with members of the veterinary team and clients.

Throughout the unit, students are encouraged to engage in self-reflection to be able to evaluate the quality of the care provided to patients, but also how effective they

The principles and skills gained in this unit will support future employment within the veterinary sector. Understanding how to optimise the welfare of animals with variable needs, and how to provide accommodation and care to optimise positive behaviour and health provide valuable skills for anyone seeking to pursue a career working in the zoo, pet and equine sectors. In addition, gaining an appreciation for how individuals interact and use communication effectively when working is an essential skill to underpin careers across the animal sector, where good client and customer communication skills and effective team working are key to the success of businesses.

Learning Outcomes

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

- 1 Evaluate the role of teamwork and communication within the veterinary practice
- 2 Analyse patient requirements in advanced nursing cases
- 3 Construct advanced nursing care plans
- 4 Critically reflect on own performance

Essential Content

LO1 Evaluate the role of teamwork and communication within the veterinary practice

The veterinary team:

Roles and responsibilities.

Verbal and non-verbal communication:

Direct, authoritative, statements, body language, indirect, modes (e.g. face-to-face, telephone, written, social media, video) and models of communication (e.g. listening and questioning) in the veterinary environment

Recognising own preferred communication style and how to adapt it to different situations.

The veterinary environment:

The role of ethics in communication

Professional integrity and confidentiality

Knowledge of when to seek peer support when dealing with clients

Factors which can affect professional relationship with clients and veterinary colleagues

Dealing with complaints

Client-veterinary bond.

Understand how emotions can affect communication and how to manage communication in difficult scenarios related to advanced patient care:

Terminal illness

Culture

Socio-economic status

Religious beliefs

Client age

Euthanasia

Welfare cases.

LO2 Analyse patient requirements in advanced nursing cases

Identification of advanced nursing cases:

Common medical cases, fluid therapy cases, trauma cases, non-elective surgical cases, paresis and paralysis cases, oncology

Advanced surgical cases

Nursing the infectious/contagious patient: barrier nursing

Nursing the neonate

Preparation of animal accommodation for advanced nursing cases

Aetiopathogenesis of common medical diseases and syndromes in dogs, cats, exotic animals and horses.

Knowledge and understanding of the requirements of advanced nursing cases:

Role of the veterinary surgeons versus role of the veterinary nurse and animal nursing assistants (for the UK, this will include a review of the Veterinary Surgeons Act and Schedule Three, and RCVS Code of Conduct) Drug calculations and dose rates

Basal metabolic rate (BMR) and basal energy requirements (BER)

Methods that encourage eating and drinking e.g. fluid therapy and assisted feeding

Fluid therapy: indication

Fluid calculations: fluid replacement and daily maintenance rate, preparation of equipment for fluid therapy, maintenance of patients on fluid therapy, common issues and how to avoid them

Drug administration methods: oral and parenteral (simulation only)

Risk assessment

Health and Safety

Working protocols: hygiene, prevention of disease transmission, cleaning, waste disposal.

Monitoring of advanced nursing care patients:

Frequency of monitoring in advanced nursing care cases

Routine monitoring e.g. listing relevant parameters which should be monitored for advanced nursing cases

Ability to appraise quality of life related to short- and long-term prognoses in advanced nursing cases.

LO3 Construct advanced nursing care plans

Nursing care plans:

Common theories and models

Differences between routine and advanced nursing care plans

Example nursing care plans

Importance of accurate record-keeping

Designing and using nursing care plans for individual patients.

LO4 Critically reflect on own performance.

Processes and practices of reflection:

Defining reflection: physical, mental, emotional, values, context, practice, improvement

Reflective models: Schon, Gibbs, Kolb, Ghaye

Reflective writing.

The role of reflection in the veterinary practice and nursing care

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Evaluate the role of teamwork and communication within the veterinary practice		D1 Evaluate the suitability of different models, modes and methods of communication used in veterinary practice, using advanced patient care examples
P1 Describe the roles of key personnel in the veterinary team P2 Discuss different models, modes and methods of communication used in veterinary practice	M1 Debate factors which influence communication in the veterinary practice	
LO2 Analyse patient requirements in advanced nursing cases		D2 Analyse the role of the veterinary surgeon and veterinary nurse in advanced patient care
P3 Identify which patients are classified as advanced nursing cases P4 Explain the Health and Safety, and hygiene requirements of advanced patients	M2 Calculate fluid therapy requirements for a specified advanced nursing case	
LO3 Construct advanced nursing care plans		D3 Critically analyse the role of different nursing care plans used in the veterinary environment within advanced patient care
P5 Review common nursing care models used in the veterinary environment P6 Design nursing care plans for specified advanced nursing care cases	M3 Explain the role of advanced patient care plans and outline patient progress for a specified case to the client	
LO4 Critically reflect on own performance		D4 Critically reflect on your own skills, knowledge and personal attributes and how they would support a career in animal nursing
P7 Recognise own communication style P8 Discuss how individual personal communication style can influence relationships in the veterinary practice	M4 Discuss the skills, knowledge and personal attributes required to be an effective nurse	

Recommended Resources

Textbooks

ACKERMAN, N. and ASPINALL, V. (2016) *The Complete Textbook of Veterinary Nursing*. 3rd edn. Kidlington: Elsevier Health.

ALDRIDGE, P. and O'DWYER, L. (2013) *Practical Emergency and Critical Care Nursing*. New Jersey: Wiley-Blackwell.

BASSOT, B. (2016) *The Reflective Journal*. London: Palgrave Macmillan.

COOPER, B., MULLINEAUX, E. and TURNER, L. (2011) *BSAVA Textbook of Veterinary Nursing*. 5th edn. Gloucester: BSAVA.

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

GIRLING, S.J. (2013) *Veterinary Nursing of Exotic Pets*. 2nd edn. New Jersey: Wiley-Blackwell.

ORPET, H. and WELSH, P. (2010) *Handbook of Veterinary Nursing*. 2nd edn. New Jersey: Wiley-Blackwell.

TARRANT, P. (2014) *Reflective Practice and Professional Development*. London: SAGE.

WILLIAMS, J.M. (2009) *The Complete Textbook of Animal Health and Welfare*. Kidlington: Elsevier.

Web

www.theveterinarynurse.com The Veterinary Nurse Journal
Journal search
(Online journal articles)

www.vetsonline.com Vets online
The Veterinary Times Journal,
Veterinary Nursing Times and
Veterinary Business Journal
(Online journal articles)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 7: Animal Nutrition

Unit 10: Animal Nursing

Unit 15: Animal Collection Management

Unit 30: Advanced Management Accounting

Unit code Y/508/0537

Unit level 5

Credit value 15

Introduction

The overall aim of this unit is to develop students' understanding of management accounting. The focus of this unit is on critiquing management accounting techniques and using management accounting to evaluate company performance.

Students will explore how the decisions taken through the use of management accounting techniques influence managerial behaviour across a land-based organisation.

On successful completion of this unit, students will be in a position to support a land-based organisation to create value through effective decision-making, where management accounting is used, to some degree, to control members of the organisation. In addition, students will have the fundamental knowledge and skills to progress to a higher level of study.

Learning Outcomes

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

- 1 Analyse the purpose for developing and presenting financial information
- 2 Evaluate the use of management accounting techniques to support organisational performance
- 3 Analyse actual and standard costs to control and correct variances
- 4 Evaluate how a changing business environment impacts on management accounting.

Essential Content

LO1 Analyse the purpose for developing and presenting financial information

Users of financial information:

Investors, senior management, banks and government.

Developing financial statements:

Critiquing why financial information should be developed into statements

The value of financial statements in support of a financial plan and decision-making.

Presenting financial information:

Critiquing the use of profit and loss statements, trial balances, cash flow statements and balance sheets as methods to present financial information.

LO2 Evaluate the use of management accounting techniques to support organisational performance

Microeconomic techniques:

Cost analysis, cost-volume profit, flexible budgeting and cost variances.
Absorption and marginal costing.

Cost allocation:

Considering the theoretical aspects as well as how this is applied in practice.

Capital and capital budgeting:

The meaning behind these terms, their importance and their use

Techniques e.g. Net Present Value (NPV), Internal Rate of Return (IRR), Discounted Cash Flow (DCF) and pay back periods.

LO3 Analyse actual and standard costs to control and correct variances

Actual costs:

What does this mean?

How is actual cost determined?

How does this differ to estimated or standard costs?

Standard costs:

What does this mean?

How is standard cost determined?

How does estimating standard costs result in variances?

Variances:

Variance analysis as a concept and a technique

Negative and positive variances

How can a negative variance be considered a positive and vice versa?

Controlling and correcting variances:

Integrating variance analysis into budget monitoring across an organisation

Reporting systems for monitoring and controlling variances

Schedule variance versus cost variance.

LO4 Evaluate how a changing business environment impacts on management accounting.

Analysing changes to a business environment:

Internal and external analysis techniques

Comparing the outcomes of analysis to inform decisions and to evaluate possible implications for management accounting.

Impact of the business environment on management accounting systems:

Using technology to enhance and support processes and procedures

The role of improved communication within a system to expedite decision-making.

Impact of change on management accounting systems:

Determining the impact of different types of change

Deciding how to respond to different types of change

Ensuring effective communication and acceptance of change.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Analyse the purpose for developing and presenting financial information		D1 Critically evaluate financial information supported by effective and appropriate judgements
P1 Analyse the purpose and presentation of financial information from the perspective of different stakeholders	M1 Evaluate how and why financial information should be developed and appropriately presented to support financial planning and decision-making	
LO2 Evaluate the use of management accounting techniques to support organisational performance		LO2 LO3 D2 Critically evaluate the application of different accounting techniques and variances to support conclusions and recommendations
P2 Evaluate the use of different accounting microeconomic techniques in application to supporting organisational performance	M2 Evaluate the value and importance of a wide range of accounting techniques by assessing both advantages and disadvantages	
LO3 Analyse actual and standard costs to control and correct variances		
P3 Analyse the concept of variance analysis in its importance for organisational budget control P4 Analyse actual and standard costs to control and correct variances	M3 Evaluate the advantages and disadvantages of different types of variances	
LO4 Evaluate how a changing business environment impacts on management accounting		D3 Critically evaluate the impact of changes, and support justified recommendations for future communication and acceptance of change
P5 Evaluate how external and internal factors changing the business environment impact upon management accounting	M4 Determine the impact of different types of change and the decisions made to respond to these changes	

Recommended Resources

Textbooks

DRURY, C. (2012) *Management and Cost Accounting*. 8th edn. Boston: Cengage Learning.

EDMONDS, T. and OLDS, P. (2013) *Fundamental Managerial Accounting Concepts*. 7th edn. Maidenhead: McGraw-Hill.

HORNGREN, C., SUNDEN, G., STRATTON, W., BURGSTAHLER, D. and SCHATZBERG, J. (2013) *Introduction to Management Accounting*. Harlow: Pearson.

SEAL, W. et al. (2014) *Management Accounting*. 5th edn. Maidenhead: McGraw-Hill.

ZIMMERMAN, J.L. (2014) *Accounting for Decision-making and Control*. 8th edn. New York: McGraw-Hill.

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 21: Management Accounting

Unit 31: Equine Health and Disease

Unit code A/616/7857

Unit level 5

Credit value 15

Introduction

Whether a horse or donkey is kept for sport, work, leisure or companionship, they are all susceptible to becoming ill, encountering an injury or contracting disease. Ill health of horses, donkeys, etc. does not only increase care need but can also lead to a reduced lifespan and a reduction in long-term performance. With this in mind, those responsible for horses, donkeys, etc. as an owner, groom, instructor, yard manager and any other role involving hands-on care of these animals must become aware of the risks to the animals' health, the means of early detection, prevention methods and treatments available.

The purpose of this unit is to provide students with the broad range of skills to act quickly and confidently to health issues they may face in the equine industry, identifying when they will require specialist veterinary assistance and the steps they can take to prevent the worsening of a situation.

This unit encourages students to become familiar with the parameters of equine health, and how to monitor and maintain it. Students will become familiar with the symptoms of disease threats to equines worldwide, the causal agents and how to nurse those affected in order to limit the risks of further transmission.

Wider disease prevention methods will also be investigated to take sensible cross-contamination precautions at locations where unfamiliar horses, donkeys, etc. are likely to meet. In addition, students will gain knowledge of the equine immune system to better understand how it fights infection and repairs, and also how vaccinations work to heighten defences.

One of the most likely health concerns encountered with horses, donkeys, etc. is injury. It is for this reason that the unit will also provide students with the knowledge to identify the symptoms of injury types, the treatment required both in first aid and longer-term management, and also the importance of acknowledging limitations in the care they can provide and therefore needing specialist assistance.

Through completion of this unit, students will be able to determine the health of a horse, donkey, etc. in their care, and quickly determine changes that may require attention. They will be able to validate assumptions of poor health through practical assessment methods, and identify when additional veterinary assistance is needed.

Learning Outcomes

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

- 1 Interpret measures of health and ill health in horses and/or donkeys to improve conditions of care and welfare
- 2 Discuss the appropriate management of specific diseases in horses and/or donkeys to work towards a quickened recovery and reduce the risk of transmission
- 3 Analyse the role of the immune system in horses and/or donkeys to develop knowledge of natural defences and the use of vaccinations
- 4 Determine types of injury in horses and/or donkeys and the treatments required to minimise long-term effects.

Essential Content

LO1 Interpret measures of health and ill health in horses and/or donkeys to improve conditions of care and welfare

Measures of health and ill health:

Visual, physical and veterinary measures

TPR, condition, capillary refill, behaviour, stance, mucous membranes, heat, swelling, soreness, injury, haematology results, droppings, staling, hydration.

Lameness

Hoof and flexion testing

Static and dynamic musculoskeletal assessment.

LO2 Discuss the appropriate management of specific diseases in horses and/or donkeys to work towards a quickened recovery and reduce the risk of transmission

Diseases and conditions:

Metabolic diseases, diet-related conditions, contagious diseases, notifiable diseases, zoonosis

Ectoparasite and endoparasite infestation.

Management:

Causal agents, symptoms, prognosis, prevention, and treatments.

Reducing the risk of transmission:

Nursing techniques, disinfection, asepsis, sterilisation, isolation and quarantine

Barrier nursing

Veterinary referral, ethical treatments, euthanasia, disposal of cadavers and clinical waste

Minimising direct and indirect contact between unfamiliar horses, donkeys, etc.

LO3 Analyse the role of the immune system in horses and/or donkeys to develop knowledge of natural defences and the use of vaccinations

Disease and immunity:

Structure of the immune system, T-cells, B-cells, natural killer cells, phagocytes, platelets, thymus, spleen, interaction between cellular and humoral immunities.

Innate and adaptive immunity:

Exterior defences, inflammation, antibodies, antigens, integrated defence mechanisms.

Vaccinations:

Vaccines available for equines

Prophylactic, therapeutic

Vaccine types e.g. inactivated, attenuated.

LO4 Determine types of injury in horses and/or donkeys and the treatments required to minimise long-term effects

Types of wound and injury:

Puncture, laceration, incised, haemorrhage, contusion, abrasion, sprain, strain, dislocation, fracture, internal injuries

Tendon and joint injuries.

First aid and long-term treatment:

Roles and limitations, conditions and injuries necessitating first aid, first-aid procedures, first-aid kits, wound management bandaging techniques

Cold hosing, tubing

Consideration of euthanasia.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Interpret measures of health and ill health in horses and/or donkeys to improve conditions of care and welfare			
P1 Interpret results from two equine health checks to draw conclusions regarding the health of each animal		M1 Explain alternative measures of health to strengthen health evaluations	D1 Formulate a health profile for two horses or donkeys utilising both current health records and history to form conclusions and recommendations for future health monitoring
P2 Devise advisory notes to improve the care and welfare of horses and/or donkeys as a result of completed health checks			
LO2 Discuss the appropriate management of specific diseases in horses and/or donkeys to work towards a quickened recovery and reduce the risk of transmission			
P3 Investigate three specific equine diseases of concern to enable quick identification of symptoms, transmission, treatment and prevention		M2 Evaluate barrier nursing techniques to heighten awareness and improve effectiveness in the control of disease	D2 Design an informative poster to advise riders at events to be aware of the risks of cross-contamination and advise ways to avoid the spread of disease
P4 Discuss the disease management strategies required for equines, people and the wider environment following a disease outbreak to reduce spread			
LO3 Analyse the role of the immune system in horses and/or donkeys to develop knowledge of natural defences and the use of vaccinations			
P5 Analyse how the horse and/or donkey's natural immune responses interact to provide a first line of defence against invading pathogens		M3 Describe how the horse and/or donkey's immune response develops memory of invading pathogens to prevent reinfection	D3 Critically compare the reasons for and against the use of vaccinations in protecting horses and/or donkeys against disease to highlight if the benefits outweigh the risks

Pass	Merit	Distinction
P6 Explain equine vaccines available and how they generate protection against disease		
LO4 Determine types of injury in horses and/or donkeys and the treatments required to minimise long-term effects		D4 Evaluate the first aid and long-term care provided in a given scenario to care for an injured horse and/or donkey
P7 Distinguish five types of wound found on horses and/or donkeys, and describe the short- and long-term treatments required to minimise long-term effects	M4 Compare the treatments needed for injuries to soft tissue and bone, in ensuring quick and appropriate first aid responses	

Recommended Resources

Textbooks

- BREGA, J. (2005) *Essential Equine Studies: Book One: Anatomy and Physiology*. London: J.A. Allen.
- BREGA, J. (2007) *Essential Equine Studies: Book Three: Injury, Disease and Nursing*. London: J.A. Allen.
- BRENNAN, M.L. (2004) *Complete Holistic Care & Healing for Horses: The Owner's Veterinary Guide to Alternative Methods and Remedies*. Addington: Kenilworth Press.
- BROMILEY, M. (2007) *Equine Injury, Therapy and Rehabilitation*. 3rd edn. Oxford: Blackwell.
- DAVIES, Z. (2005) *Introduction to Horse Biology*. Oxford: Blackwell.
- DEVEREUX, S. (2006) *The Veterinary Care of the Horse*. 2nd edn. London: J. A. Allen.
- HASTIE, P.S. and VINCER, C. (2006) *The BHS Veterinary Manual (British Horse Society)*. London: Kenilworth Press Ltd.
- HODGSON, D.R., MCGOWAN, C.M. and MCKEEVER, K. (2014) *The Athletic Horse: Principles and Practice of Equine Sports Medicine*. 2nd edn. Missouri: Elsevier Saunders.
- IVENS, P. and HASTIE, P.S (2012) *The BHS Veterinary Manual*. 2nd edn. Shrewsbury: Kenilworth Press.
- ORSINI, J.A and DIVERS, T. (2014) *Equine Emergencies: Treatment and Procedures*. 4th edn. Philadelphia: Saunders.

Web

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| www.buckinghamequinevets.com | Buckingham Equine Vets
Injuries in Competition Horses
(General reference) |
| www.petmd.com | PET MD
Horse Conditions
(General reference) |
| www.thehorse.com | The Horse
The Equine Immune System
(General reference) |
| www.thehorse.com | The Horse
Vaccination Basics for Horses
(General reference) |

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 23: Biological Principles

Unit 32: Therapy and Rehabilitation

Unit 39: Advanced Equine Performance

Unit 32: Therapy and Rehabilitation

Unit code F/616/7858

Unit level 5

Credit value 15

Introduction

As the modern-day horse is placed under increasing demands to perform and work in a variety of settings, the likelihood of injury increases in correlation. Injuries of the muscular and skeletal systems limit performance, and can have detrimental effects on the overall wellbeing of the horse. If a horse has experienced stress and trauma, this can in turn affect behaviour and attitude to the work.

It is for these reasons that heightened awareness and management strategies have been developed to support recovery and return to work for horses following injury or trauma. In an aim to prolong the working and performance longevity of horses, a manager or carer must respond to needs and possess knowledge of the options available to them in the recovery process.

Covered within the unit are the factors that predispose the horse to problems, including specific discipline demands, environmental causes and metabolic disorders. The mechanisms of injury to the musculoskeletal system, both bone and soft tissue, the processes of short and long-term treatment to these injuries, and rehabilitation leading to full recovery are also discussed. In addition, the options of modern-day complementary and alternative therapies to support the recovery process are investigated.

On completion of the unit, students should be able to review the stresses placed on a working or performance horse, and show heightened awareness of the signs and symptoms of injury. They should be able to take action to minimise the risk of injury, and, if it occurs, identify appropriate treatment and therapies to support recovery.

Learning Outcomes

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

- 1 Review the factors that predispose the working horse to injury and performance-related problems to consider how they may be reduced
- 2 Describe the mechanisms within the musculoskeletal system during injury and repair to support recovery
- 3 Explain the processes of treatment and rehabilitation to plan for recovery of injuries in horses
- 4 Evaluate complementary and alternative therapies to select appropriate treatment methods following an injury.

Essential Content

LO1 Review the factors that predispose the working horse to injury and performance-related problems to consider how they may be reduced

Specific demands:

Physical demands relating to speed, endurance, jumping effort, repetitive work, competitive demands.

Environmental factors:

Stabling, husbandry practices, exercising environment, travelling. Surface type.

Environmental-induced disorders:

Recurrent airway obstruction, small airway disease, heatstroke. Lameness, soft tissue injuries.

Metabolic factors and inherent disorders:

Feeding and exercise regimes, exertional myopathies, colic, laminitis. Inherent cardiovascular disorders (atrial fibrillation).

LO2 Describe the mechanisms within the musculoskeletal system during injury and repair to support recovery

Physiology, causes and symptoms:

Main causes and risk factors for muscle, tendon and ligament injuries, muscle damage and repair mechanisms

Tendon and ligament injuries and repair

Diagnosis

Hoof evaluation

Impact of farriery work.

Bone and joint disorders:

Fractures, epiphysitis, periostitis, osteitis, osteoarthritis, developmental orthopaedic diseases

Diagnosis.

Repair process:

Wound healing, bone and muscle repair.

LO3 Explain the processes of treatment and rehabilitation to plan for recovery of injuries in horses

First aid of performance-related injuries:

First line treatment, importance of early assessment.

Role of the veterinary surgeon and paraprofessionals:

Role of the veterinary surgeon and veterinary treatments available. Support for veterinary team e.g. osteopath, physiotherapist, farrier.

Treatment aids:

Ultrasound, radiograph, thermography, hydrotherapy, laser, massage, physiotherapy, taping, solarium, corrective and therapeutic shoeing.

Therapy and rehabilitation programmes:

Muscle re-education, weakness limitations, progressive work routine and exercise to aid rehabilitation, use of solarium swimming pool, water, treadmill

Use of training aids and ground schooling

Assessment of progress/outcome measures.

LO4 Evaluate complementary and alternative therapies to select appropriate treatment methods following an injury

Role of alternative and complementary therapies:

Position in relation to conventional therapies, considerations when using 'natural' remedies.

Evidence supporting therapies:

Magnotherapy, acupuncture, herbalism, aromatherapy, massage, physiotherapy, chiropractic, osteopathy, nutritional supplements. Electrotherapies, shock wave and cryotherapy.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Review the factors that predispose the working horse to injury and performance-related problems to consider how they may be reduced		LO1 LO2 D1 Plan a detailed case study on a performance or working horse to investigate lifestyle, the likelihood of injury/performance-related problems, and suggest possible changes in care to reduce the risks
P1 Review the factors that predispose the working horse to injury and poor performance in a specific setting and role P2 Discuss the ways to manage and reduce risk factors leading to injury and performance-related problems	M1 Compare two different uses for horses, in detail, to highlight the common causes of injury and performance-related problems and the reasoning behind each	
LO2 Describe the mechanisms within the musculoskeletal system during injury and repair to support recovery		
P3 Describe two musculoskeletal injuries (one soft tissue and one bone) in detail, and the way in which they undergo repair to support recovery	M2 Explain how horse locomotion is connected to musculoskeletal injury to highlight the effect movement has on the mechanisms of injury and repair	
LO3 Explain the processes of treatment and rehabilitation to plan for recovery of injuries in horses		LO3 LO4 D2 Design an appropriate plan of traditional and complementary treatment for a given scenario to support recovery, and recommend the required rehabilitation to take place
P4 Respond accurately to questions on the range of treatment aids available for horses and how they assist recovery from injury P5 Explain the use of rehabilitation programmes for recovery from injury in horses	M3 Assess the appropriateness of a range of treatment aids and rehabilitation plans in the recovery from injury	

Pass	Merit	Distinction
LO4 Evaluate complementary and alternative therapies to select appropriate treatment methods following an injury		
P6 Evaluate the range of complementary and alternative therapies available for horses in relation to specific injury types	M4 Distinguish key benefits of complementary and alternative therapies available for horses in treating specific injuries	

Recommended Resources

Textbooks

- BROMILEY, M. (2007) *Equine Injury, Therapy and Rehabilitation*. 3rd edn. London: Wiley-Blackwell.
- BROMILEY, M. (2009) *Natural Methods for Equine Health and Performance*. 2nd edn. London: Wiley-Blackwell.
- DENOIX, J. (2014) *Biomechanics and Physical Training of the Horse*. London: CRC Press.
- HODGSON, D.R. McGOWAN, C.M. and McKEEVER, K. (2014) *The Athletic Horse: Principles and Practice of Equine Sports Medicine*. 2nd edn. Missouri: Elsevier Saunders.
- HORDEBAIGT, J.P. (2007) *Equine Massage: A Practical Guide*. 2nd edn. New Jersey: John Wiley & Sons.
- KING, M. and DAVIDSON, E. (2016) *Rehabilitation of the Equine Athlete, An Issue of Veterinary Clinics of North America*. Philadelphia: Elsevier.
- MARLIN, D. and NANKERVIS, K.J. (2002) *Equine Exercise Physiology*. Oxford: Blackwell Science.
- McGOWAN, C. and GOFF, L. (2016) *Animal Physiotherapy: Assessment, Treatment and Rehabilitation of Animals*. 2nd edn. London: Wiley-Blackwell.
- PILLINER, S., ELMHURST, S. and DAVIES, Z. (2002) *Horse in Motion*. Oxford: Blackwell.
- ROBINSON, N.E. and WILSON, M.R. (2003) *Current Therapy in Equine Medicine*. 5th edn. Eastbourne: Saunders.
- ROSE, R.J. and HODGSON, D.R. (2000) *Manual of Equine Practice*. 2nd edn. Philadelphia: Saunders.
- SUTTON, A. (2006) *The Injury-Free Horse: Hand-On Methods for Maintaining Soundness and Health*. 2nd edn. London: David & Charles.
- TORTORA, G.J and DERRICKSON, B.H. (2014) *Principles of Anatomy and Physiology*. 14th edn. Chichester: Wiley.
- VOGEL, C. (2006) *The Compete Performance Horse: Feeding, Fitness, Lameness, Preventive Medicine*. 2nd edn. London: David & Charles.
- WILLIAS, G. and McKENNA, A. (2014) *Horse Movement: Structure, Function and Rehabilitation*. London: J.A. Allen & Co Ltd.
- WYCHE, S. (2002) *The Horses Muscles in Motion*. Marlborough: Crowood Press.

Web

www.horseandhound.co.uk	Horse and Hound All about suspensory ligament injuries (Article)
www.smartpakequine.com	SmartPak Tendons & Ligaments: Treating injuries and Supporting Healthy Tissues (Research)
www.thehorse.com	The Horse Developing the Sport Horse: Common Injuries (Article)
http://veterinarynews.dvm360.com	Veterinary News Predisposed to Injury: Different sports carry different risks for horses (Article)
www.vetfolio.com	VetFolio An Overview of Equine Rehabilitation (General reference)

Essential Requirements

Tutors must be appropriately qualified and experienced within this subject to cover the principles and skills development aspects of this unit.

Links

This unit links to the following related units:

Unit 6: Animal Anatomy and Physiology

Unit 12: Horse Husbandry

Unit 31: Equine Health and Disease

Unit 33:

Animal Breeding and Genetics

Unit code J/616/7859

Unit level 5

Credit value 15

Introduction

The breeding of animals is fundamental to the animal industry worldwide, and possessing an understanding of genetic processes has a clear advantage for those breeding animals. Genetics spans several key areas of the animal management industry, including conservation, veterinary science, and animal welfare. This unit introduces the key principles of genetics and how this impacts the overall breeding of animals.

Within many settings of the animal management industry, neonatal and young animals are cared for. This unit has an industry-led focus, providing students with the required knowledge to progress into a range of job roles.

The unit covers a wide range of topics, opening with genetic information and key principles of heredity. This develops onto the planning of breeding, caring for young animals and potential problems associated with specific species. Finally, reproductive technologies are considered, with a key focus on the practicality and availability for breeders.

There is an opportunity for providers to integrate practical skills with breeding and genetics knowledge within this unit. Students can undertake laboratory sessions to enhance the learning of key content, and animal breeding is also encouraged to provide students with actual breeding and husbandry skills.

Learning Outcomes

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

- 1 Analyse genetic information and principles of inheritance in relation to breeding animals
- 2 Manage the breeding process from oestrus to parturition
- 3 Manage neonatal and young animals from parturition to adolescence
- 4 Explore the uses of reproductive technologies when breeding animals.

Essential Content

LO1 Analyse genetic information and principles of inheritance in relation to breeding animals

Genetic information:

Deoxyribonucleic acid

Ribonucleic acid

Chromosomes

Genes

Alleles.

Protein synthesis:

Transcription and translation.

Gene interactions:

Incomplete dominance

Lethal alleles

Co-dominance

Multiple alleles

Epistasis

Sex-linkage.

Meiosis and mitosis:

Each stage of division for somatic cells and gametes.

Mendelian genetics:

The work of Gregor Mendel

Monohybrid and dihybrid crosses using probability tables (Punnett squares).

LO2 Manage the breeding process from oestrus to parturition

Mate selection:

Purpose of intended breeding

Genotype analysis

Breeding for specific phenotypes

Pedigree analysis.

Reproductive stages and potential problems:

Oestrus

Ovulation

Conception

Gestation

Parturition

Record-keeping

Health and Safety considerations.

LO3 Manage neonatal and young animals from parturition to adolescence

Neonatal care and young animal care:

First days of life

Nutrition

Housing

Husbandry

Handling

Health

Vaccinations.

Potential problems:

Orphaned neonates

Species-specific problems.

Legislative requirements:

Species-specific legislative requirements

Sale/transfer of animals

Notifiable disease

Animal welfare standards.

LO4 Explore the uses of reproductive technologies when breeding animals.

Genetic technologies:

Genetic analysis

DNA screening

Hormone therapy

Superovulation

Ovulation indicators

Artificial insemination

Oestrus synchronisation

Embryo transfer

Confirmation of gestation.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Analyse genetic information and principles of inheritance in relation to breeding animals		D1 Critically evaluate the work of Gregor Mendel in relation to the relevance of his laws in modern-day breeding programmes
P1 Compare the properties of DNA and RNA with specific emphasis on their roles in protein synthesis P2 Discuss the role of meiotic and mitotic cell division in the development of offspring P3 Review the use of probability tools when predicting the outcome of specific crosses/matings	M1 Investigate the impacts of the following gene interactions with specific emphasis on phenotypic traits: Lethal alleles Epistasis Incomplete dominance Co-dominance Multiple alleles Sex-linkage	
LO2 Manage the breeding process from oestrus to parturition		LO2 LO3 D2 Evaluate information available to breeders when planning a breeding programme from oestrus identification to the weaning of young animals for a given species
P4 Analyse the factors that influence mate selection in a given species P5 Discuss stages of the breeding process for a given species P6 Discuss the potential problems during each stage of reproduction for a given species P7 Assess the Health and Safety and record-keeping requirements for a given species	M2 Provide an analysis of how breeders may prevent, manage and eradicate potential reproductive problems from a breeding programme for a specific species	

Pass	Merit	Distinction
LO3 Manage neonatal and young animals from parturition to adolescence		
P8 Discuss the care requirements of neonates and young animals for a given species P9 Investigate the potential problems that may arise with neonatal and young animals for a given species P10 Analyse legislative requirements when caring for neonatal and young animals for a given species	M3 Create a husbandry plan for the care of neonatal and young animals from parturition to adolescence for a given species	
LO4 Explore the uses of reproductive technologies when breeding animals		
P11 Discuss a range of reproductive technologies available to breeders of a range of species	M4 Evaluate the success of reproductive technologies in relation to functionality, cost and availability for a range of species	

Recommended Resources

Textbooks

BOURDON, R.M. (1999) *Understanding Animal Breeding*. 2nd edn. Harlow: Pearson.

DALTON, C. and WILLIS, M.B. (1998) *Introduction to Practical Animal Breeding*. Oxford: Blackwell.

HAFEZ, E.S.E. and HAFEZ, B. (2000) *Reproduction in Farm Animals*. Lippincott: Williams & Wilkins.

HOLT, W.V., PICKARD, A.R., RODGER, J.C. and WILDT, D.E. (2002) *Reproductive Science and Integrated Conservation*. Cambridge: Cambridge University Press.

KLUG, W.S., CUMMINGS, M.R. and SPENCER, C.A. (2007) *Essentials of Genetics*. 6th edn. San Francisco: Benjamin Cummings.

MEPHAM, T.B. (1991) *Physiology of Lactation*. New Jersey: John Wiley & Sons Ltd.

MINORSKY, P.V. and JACKSON, R.B. (2008) *Biology*. 8th edn. San Francisco: Benjamin Cummings.

WATSON, J.D., BAKER, T.A., BELL, S.P., GANN, A., LEVINE, M. and LOSICK, R. (2008) *Molecular Biology of the Gene*. 6th edn. San Francisco: Benjamin Cummings.

WINTER, P., HICKEY, I. and FLETCHER, H. (2002) *Instant Notes in Genetics*. Didcot: BIOS Scientific Publishers.

Web

www.animalgenetics.eu	Research Canine, Equine (General reference)
www.animalsmart.org	Animal Science Breeding and Genetics (General reference)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 5: Animal Husbandry

Unit 6: Animal Anatomy and Physiology

Unit 34: Management of Animal Boarding Establishments

Unit code A/616/7860

Unit level 5

Credit value 15

Introduction

The aim of the unit is to provide students with a holistic understanding of animal boarding establishments, policies, and processes. The companion animal market is a highly lucrative and expansive industry that is continually growing, and animal boarding establishments employ a vast number of employees within the animal management industry. Possessing a fundamental knowledge of processes from design to husbandry equips students with immediate employment prospects.

Management skills are embedded throughout the unit content and equip students with the key knowledge and skills required within an animal boarding environment. Successful boarding establishments encompass a range of ancillary services to improve profit and engage clients with a range of additional facilities. Dealing with an array of animals, students will develop handling and restraint skills of animals in a range of behavioural states. Effective husbandry techniques are key when working with, for example, dogs and cats in a potentially stressful environment.

In addition, a wide range of legislation and policy governs animal boarding establishments. This unit therefore requires students to analyse legislation in order to develop an understanding of the requirements of managing a boarding establishment.

Through effective engagement with this unit, students gain insights into animal boarding establishment design with consideration of legislation and animal welfare, admission processes and administrative responsibilities, ancillary services and husbandry regimes. These are all transferable skills across the animal management industry.

Learning Outcomes

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

- 1 Evaluate a range of animal boarding designs in relation to animal welfare and legislation
- 2 Discuss advantages and disadvantages of ancillary services commonly employed by animal establishments
- 3 Describe and follow administrative procedures required for an animal boarding establishment
- 4 Demonstrate specialist handling, husbandry and restraint techniques within an animal boarding setting.

Essential Content

LO1 Evaluate a range of animal boarding designs in relation to animal welfare and legislation

Animal boarding designs:

Materials

Capacity

Facilities

Fixtures and fittings

Maintenance

Cost

Animal welfare and legislative considerations (contextualise to delivering country).

LO2 Discuss advantages and disadvantages of ancillary services commonly employed by animal boarding establishments

Ancillary services:

Grooming parlour

Day care

Training

Puppy group

Day care facilities

Animal transportation

Retail outlets.

LO3 Describe and follow administrative procedures required for an animal boarding establishment

Admitting animals and administration:

Booking-in procedure

Customer service

Information collection

Data protection

Vaccinations

Financial records

Dealing with emergencies.

LO4 Demonstrate specialist handling, husbandry and restraint techniques within an animal boarding setting.

Handling equipment:

Techniques for dealing with aggressive, nervous, or stressed animals

Feeding processes

Health checks.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Evaluate a range of animal boarding designs in relation to animal welfare and legislation		LO1 LO2 D1 Critically evaluate how the functional characteristics impact the overall design of animal boarding establishments, with consideration of animal welfare, ancillary services and legislative requirements
P1 Design an animal boarding establishment for use in the following circumstances: <ul style="list-style-type: none">• Rescue• Boarding• Breeding• Competition P2 Evaluate a range of animal boarding designs and suggest realistic improvements in relation to animals' welfare, legislation and client requirements	M1 Assess current legislation impacting animal boarding design. M2 Assess current legislation impacting animal welfare within an animal boarding environment	
LO2 Discuss advantages and disadvantages of ancillary services commonly employed by animal boarding establishments		
P3 Investigate current ancillary services offered to clients using animal boarding establishments P4 Compare a range of ancillary services offered to clients of animal boarding establishments	M3 Assess the feasibility of providing a range of ancillary services	
LO3 Describe and follow administrative procedures required for an animal boarding establishment		D2 Discuss how policies and procedures would apply to an emergency situation, highlighting how to manage a situation within an animal boarding establishment
P5 Demonstrate the admission process for an animal boarding establishment following policies and procedures	M4 Assess policies and procedures within a given animal boarding setting	

Pass	Merit	Distinction
LO4 Demonstrate specialist handling, husbandry and restraint techniques within an animal boarding setting		D3 Provide a detailed analysis of husbandry requirements of animals within an animal boarding setting
P6 Identify and apply specialist handling equipment to an animal within an animal boarding establishment P7 Plan and manage a husbandry schedule for animals within an animal boarding environment. P8 Describe health and behaviour assessments for animals within an animal boarding establishment	M5 Discuss the relative advantages and disadvantages of specialist handling equipment used within an animal boarding establishment M6 Discuss the importance of health and welfare assessment within an animal boarding setting	

Recommended Resources

Textbooks

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

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

CAVILL, D. (2008) *Running your own Boarding Kennels: The complete guide to Kennel and Cattery Management*. Oxford: Blackwell.

KEY, D. (2006) *Cattery Design: The Essential Guide*. Oxford: Blackwell.

McMAINS, J.M. (2000) *Kennels and Kenneling: A Guide for Professionals and Hobbyists*. Foster City, CA: Howell Book House.

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

Web

www.kennelandcattery.com Kennel and Cattery Management
(Articles)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 2: Business and the Business Environment

Unit 9: Veterinary Practice Management

Unit 35: 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 impacts 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 which 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 game-keeping, 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:

- 1 Evaluate human influences on wildlife species and their natural habitats
- 2 Discuss species-centred approaches to wildlife conservation
- 3 Discuss habitat management strategies to promote wildlife conservation
- 4 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

Pass	Merit	Distinction
LO1 Evaluate human influences on wildlife species and their natural habitats		D1 Critically analyse the influencing factors for the decline of a wildlife population
P1 Investigate the impact of human activity on wildlife population numbers P2 Assess the impact of human activity on the natural environment	M1 Evaluate the ecological significance of human industry and agriculture on wildlife	
LO2 Discuss species-centred approaches to wildlife conservation		
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	M2 Evaluate the success of intervention in a wildlife species' population	LO2 LO3 D2 Critically evaluate the conservation actions taken to promote a wildlife population and justify suggested alternatives/ improvements
LO3 Discuss habitat management strategies to promote wildlife conservation		
P5 Discuss the ecological components of wildlife habitats P6 Compare strategies for influencing environmental factors	M3 Analyse the ecological implications of human alteration of environmental factors.	
LO4 Explore economic, social and political approaches to wildlife conservation		D3 Critically analyse the economic, cultural and political context for a conservation project
P7 Analyse the economic significance of wildlife and their habitats P8 Evaluate political and social actions undertaken in the promotion of conservation	M4 Compare the needs of different stakeholders in a conservation project	

Recommended Resources

Textbooks

BEGON, M. (2006) *Ecology: from Individuals to Ecosystems*. 4th edn. 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 edn. 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 edn. 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 14: Management of Exotic Animal Species

Unit 8: Ecological Principles

Unit 26: Evolution and Adaptations

Unit 33: Animal Breeding and Genetics

Unit 36: Ethics and Consultation

Unit code	J/616/7862
Unit level	5
Credit value	15

Introduction

This unit focuses on key ethical theories within a consultation setting. The animal management industry is a varied and diverse sector with multiple applications where ethics require consideration. From agriculture to captive animal collections, ethical approaches enable decision-making and justification of actions. Consultation on animal activity is imperative to ensure animal welfare is maintained, whilst enabling human benefit. Consultants are required throughout the industry to see all angles of an argument and provide a logical course of action that considers animal welfare and ethical standings.

Students are given the opportunity to investigate a range of areas within the animal management industry and apply ethical theory. They are also able to select specific topics that interest them and that align with their future career aspirations.

The key aim of the unit is to combine animal welfare and ethical approaches within a consulting context. Within the first two Learning Outcomes, students assess current issues within the animal industry and apply philosophical and ethical approaches whilst considering animal welfare and human requirement. The third Learning Outcome requires students to develop consultation skills within legal parameters. The final Learning Outcome of the unit enables students to recognise animal welfare indicators through behaviour and physiology within a cultural context.

This unit encourages active debate and professional argument which supports progression into a wide range of professional settings. The ability to convey logical arguments in a professional way is a highly-regarded skill within any professional setting. A working knowledge of ethical applications is also imperative within any consultation position. This unit combines both areas to provide a solid base for future employment.

Learning Outcomes

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

- 1 Analyse current ethical dilemmas in animal science/welfare
- 2 Demonstrate an awareness of present difficulties/insights at the head of animal science, and the philosophical, welfare and ethical issues related to these
- 3 Apply consultation practices while representing an understanding of legal implications of working as an expert in the animal sector
- 4 Evaluate general patterns in animal behaviour, psychological functioning and experience in relation to ethics.

Essential Content

LO1 Analyse current ethical dilemmas in animal science/welfare

Ethics:

Meta-ethics

Normative ethics

Applied ethics.

Current ethical dilemmas:

Animal welfare conflicts

Animal science conflicts.

LO2 Demonstrate an awareness of present difficulties/insights at the head of animal science, and the philosophical, welfare and ethical issues related to these

Present issues within the animal industry:

Production:

Slaughter

Accommodation

Transportation

Exhibition:

Competition

Body modification e.g. tail docking.

Hunting:

Predatory animals

Kinship

Welfare impacts

Fair chase.

Experimentation:

Wild-caught

Animal welfare.

Captivity:

Home range

Aquatic mammals.

International conservation threats:

Nuclear power

Human impacts

Philosophical applications to issues within the animal industry

Welfare impacts

Ethical standpoints.

LO3 Apply consultation practices while representing an understanding of legal implications of working as an expert in the animal sector

Regulation of animal welfare:

Statutory and regulatory

Methods of consultation

Practice of consultation.

LO4 Evaluate general patterns in animal behaviour, physiological functioning and experience in relation to ethics.

Animal behaviour patterns:

Signs of negative welfare impacts

Measuring of negative welfare impacts

Physiological function and experience:

Physiological responses to welfare impacts.

Ethical viewpoints:

Application of ethical standings in relation to the actions of individuals and cultures towards animals.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Analyse current ethical dilemmas in animal science/welfare		LO1 LO2 D1 Critically evaluate a given issue within the animal industry, including ethical and philosophical standings, and recommend changes to improve animal welfare
P1 Discuss key ethical theories in relation to the animal management industry, including: <ul style="list-style-type: none">• Meta-ethics• Normative ethics• Applied ethics P2 Analyse two ethical theories and apply to a specific animal welfare or science conflict	M1 Assess given ethical theories, highlighting the relevance of said theories in the modern-day animal industry	
LO2 Demonstrate an awareness of present difficulties/insights at the head of animal science, and the philosophical, welfare and ethical issues related to these		
P3 Select and discuss a current issue within the animal industry, including the philosophical, ethical and welfare considerations	M2 Review a selected issue within the animal industry, recognising all standpoints of the argument	
LO3 Apply consultation practices while representing an understanding of legal implications of working as an expert in the animal sector		D2 Demonstrate consultation methods within a given situation whilst considering legal implications
P4 Investigate applications of consultation within the animal industry P5 Report legal considerations in relation to consulting within the animal industry	M3 Design a consultation plan within a given situation, considering client requirements, legal frameworks, and animal welfare	

Pass	Merit	Distinction
LO4 Evaluate general patterns in animal behaviour, physiological functioning and experience in relation to ethics		D3 Justify the use of animals within a cultural context and analyse the significance of ethical viewpoints in relation to possibilities of consultation to improve animal welfare
P6 Describe methods of assessing animal welfare indicators within a given context P7 Discuss physiological and behavioural functioning as indicators of animal welfare states P8 Select a human-animal conflict and apply ethical standpoints in relation to welfare indicators	M4 Evaluate the use of animals within a cultural context, determining whether animal welfare is considered	

Recommended Resources

Textbooks

APPLEBY, M. (2001) *What Should We Do About Animal Welfare? A Rational Examination of the Politics and Economics of Animal Welfare*. Oxford: Blackwell Science.

GREGORY, N.G. (2004) *Physiology and Behaviour of Animal Suffering*. Oxford: Blackwell Science.

MICHELL, A.R. and EWBANK, R. (1998) 'Ethics, Welfare, Law and Market Forces: The Veterinary Interface', *Proceedings of RCVS & UFAW Symposium*. Oxford: Blackwell Science.

ROLLIN, B.E. (2006) *An Introduction to Veterinary Medical Ethics: Theory and cases*. New Jersey: John Wiley & Sons.

TURNER, J. and D'SILVA, J. (2006) *Animal, Ethics and Trade*. Abingdon: Earthscan.

Web

www.ciwf.org.uk	Compassion in World Farming Farm Animals, Factory Farming (General reference)
www.gov.uk	UK Government Research and testing using animals Farm Animal Welfare Committee (General reference)
www.howtoconserve.org	Conserve Marine Species Human-Animal Threats
www.rspca.org.uk	RSPCA Advice and Welfare Pets, Lab Animals, Farm Animals, Wildlife (General reference)
www.WWF.org	World Wide Fund for Nature Species threats, Habitat loss, Illegal wildlife trade (General reference)

Links

This unit links to the following related units:

Unit 1: Animal Health and Welfare

Unit 5: Animal Husbandry

Unit 25: Anthrozoology

Unit 37: Equitation II (Riding)

Unit code	L/616/7863
Unit level	5
Credit value	15

Introduction

This unit will give students the background knowledge needed to be able to work in the equine industry. It will ensure that students have the knowledge of how to train horses and ensure progression is made whilst training them. Students will learn about the theory that underpins practical horse riding as well as implementing the theory in riding sessions, focusing on a selected discipline. The module aims to develop a reflective practitioner.

In this unit, students will develop their understanding of how horses learn and what is required when training horses in-hand and under saddle for a selected discipline. They will develop knowledge of evidence-based training methods and the emerging field of equitation science, looking at the methods used for training a variety of horses.

Students will also identify and investigate the equipment, techniques and programmes used to introduce young horses to training and to develop or rehabilitate horses. They will create and implement a training programme that demonstrates progression over a timescale and consider behavioural and physical issues in a training context. In the discipline chosen to create a training plan, students must demonstrate the ability to ride and train horses up to industry standards (equivalent to BHS Level 3/4, elementary dressage, BE 100).

With an understanding of learning theory, as well as developed training techniques and riding ability, students will be able to progress to employment involving handling and riding horses, coaching, groom, behaviourist and also have greater knowledge on breed types and traits.

Learning Outcomes

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

- 1 Apply the principles of learning theory to practical training in equitation
- 2 Describe the influence of rider fitness within equine training
- 3 Design and justify a fit for purpose training programme for an individual horse in a specific discipline
- 4 Implement a successful training programme which demonstrates progression for an individual horse.

Essential Content

LO1 Apply the principles of learning theory to practical training in equitation

Reinforcement:

Use of voice, aids from reins, use of leg, use of whip/spurs, positive and negative reward, positive and negative punishment.

Non-associative learning:

Equine cognition, recall ability, environmental stimuli that provoke responses, unwanted responses.

Associative learning:

Principles of associative learning and their relationship to training horses – when is this used during riding?

Operant and classical conditioning:

Skinner and Pavlov.

LO2 Describe the influence of rider fitness within equine training

Rider fitness:

Importance of rider fitness, specific physiological systems that play a large part for riders in selected equine disciplines, research on the influence of rider fitness on equine performance, obesity in horse riders and alterations to rule books in selected disciplines.

Fitness testing:

Heart rate, bleep testing, lung capacity, stamina.

Types of training relevant to specific equine discipline's cardiovascular training:

HITT training, yoga, Pilates, core strength.

How fitness levels alter for riders between disciplines:

Dressage, eventing, racing, team chasing, show jumping.

LO3 Design and justify a fit for purpose training programme for an individual horse in a specific discipline

Goal setting and principles of training.

Considerations when designing training aims:

Breaking down the ultimate training aim of a variety of situations into training blocks of smaller, achievable goals

The aim of training any horse should be to achieve consistent correct responses

Appropriate training cycles, micro/meso/macro cycles, training diary

Reflective practice.

Assessment of horse:

Age

Level of prior fitness and training

Health records

Behaviour.

Rehabilitating horses from injury:

Specific sites of injury

Fittening work (after horse has had a long period out of work)

Re-schooling

Maintaining established horses.

Considerations when designing training programmes for a variety of horses with different training aims:

Duration and frequency of ridden and non-ridden exercise

Environment

Facilities affecting regularity of exercise and type of exercise performed

School movements and gymnastic exercises e.g. practical schooling in-hand.

Planning:

Consideration of the time taken to train horses, factors that affect rate of progress, assessment, use of positive and negative reinforcement.

LO4 Implement a successful training programme which demonstrates progression for an individual horse

Importance of reflective practice.

Development of the horse's way of going:

Short- and long-term goals, issues that arise in training programmes, carry out training regime with reflective diary and video evidence of progression.

Reflective practice:

Gibbs' cycle of reflection, learning theories, learning cycles (Kolb), Raul

Reflective portfolio to demonstrate ability to reflect and make changes to enhance training and performance, judge own ability

Methods of checking progress e.g. video, coach/instructor feedback, competition results, ease of movements and increased obedience

Building on progress e.g. adjusting goals, mid-term and long-term goals, complementary training (loose schooling, hacking, jumping).

Qualities of a good rider/trainer:

Patience, calmness, temper control, tolerance, goal setting, and clear understanding of aims, knowledge, and practical ability.

The scales of training:

The way of going e.g. rhythm, suppleness, contact, impulsion, straightness and collection.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Apply the principles of learning theory to practical training in equitation			LO1 LO2 D1 Critically analyse the use of reinforcement when it is used in both ridden and in-hand training sessions
P1 Discuss learning theories and how they influence equestrian training P2 Perform a ridden training session, demonstrating appropriate use of reinforcement methods	M1 Demonstrate the ability to recognise how learning theories influence own riding in a practical training session		
LO2 Describe the influence of rider fitness within equine training			
P3 Discuss the impact of rider fitness on a horse's ability to work/perform P4 Discuss a range of methods to improve rider fitness and core stability of a horse that will benefit position, posture and fitness	M2 Perform a ridden training session monitoring heart rate and position (of rider), making recommendations for fitness development		

Pass	Merit	Distinction
LO3 Design and justify a fit for purpose training programme for an individual horse in a specific discipline		
P5 Assess the suitability of an individual horse for a named discipline P6 Produce a six-week training programme for a horse to demonstrate development in particular selected areas	M3 Evaluate challenges that may occur whilst creating and implementing a training programme, making a contingency plan	LO3 LO4 D2 Critically evaluate the training programme, reflecting on both the horse and rider's progression, making further recommendations for a continued training programme and identifying problems that came about during the implementation of the training programme
LO4 Implement a successful training programme which demonstrates progression for an individual horse		
P7 Perform ridden training sessions demonstrating planning in conjunction with the six-week training plan P8 Produce a reflective portfolio of the six-week training programme (recording rider and horse progression)	M4 Analyse how the horse's specified skills have developed to identify strengths and areas which still require improvement.	

Recommended Resources

Textbooks

- BELL, J. and DAY, A. (2008) *101 Schooling Exercises for Horse and Rider*. 2nd edn. Devon: David and Charles.
- GERMAN NATIONAL EQUESTRIAN FEDERATION. (2017) *The Principles of Riding: Basic Training for Both Horse and Rider*. Shrewsbury: Kenilworth Press.
- HINCHCLIFF, K.W., KANEPS, A.J. and GEOR, R.J. (2007) *Equine Exercise Physiology: The Science of Exercise in the Athletic Horse*. Edinburgh: Elsevier Saunders.
- MARLIN, D.M. and NANKERVIS, K. (2002) *Equine Exercise Physiology*. New Jersey: Blackwell Publishing.
- McGREEVY, P.D. and McLEAN, A. (2010) *Equitation Science*. London: Wiley-Blackwell.
- THE BRITISH HORSE SOCIETY. (2011) *The BHS Complete Manual of Equitation: The Training of Horse and Rider (British Horse Society)*. Shrewsbury: Kenilworth Press.
- Williams, J.M. and Evans, D. (2015) *Training for Equestrian Performance*. Wageningen: Wageningen Press.
- WILLIAMS, J.M. and TABOR, G. (2017) *Rider impacts on equitation. Applied Animal Behavioural Science*. Edinburgh: Elsevier.
- WOLFRAMM, I. (2013) *The Science of Equestrian Sports: Theory, Practice and Performance of the Equestrian Rider*. London: Routledge.

Journals

- HOCKENHULL, J. and CREIGHTON, E. (2013) 'Training horses: Positive Reinforcement, Positive Punishment, and Ridden Behaviour Problems', *Journal of Veterinary Behaviour: Clinical Applications and Research*. vol. 8, no. 4, pp. 245–52.

For rider:

- DOUGLAS, J-L. (2015) Chapter 4: Rider Performance. In Williams, J.M. and Evans, D. (eds) *Training for Equestrian Performance*. Amsterdam: Wageningen: Press. Pp. 60-85

Specific papers:

- DOUGLAS, J-L., PRICE, M. and PETERS, D.M. (2012) A Systematic Review of Physiological Fitness and Biomechanical Performance in Equestrian Athletes. Amsterdam: Wageningen Press. *Physiol.*, 8 (3), 53-62.

Links

This unit links to the following related units:

Unit 18: Equitation (Riding)

Unit 20: Equestrian Performance

Unit 39: Advanced Equine Performance

Unit 38: Horse Event Management

Unit code R/616/7864

Unit level 5

Credit value 15

Introduction

As financial demands on keeping and working horses increases, owners and employees are under pressure to find commercial means to generate funds for running yards. By maximising the use of facilities, realising opportunities and generating interest in the industry, budgets can be expanded and businesses can grow. This is an increasing requirement of any yard environment, large or small, and efforts must be focused to find niche markets and form careful plans for equestrian events to be successful.

This unit considers the management, promotion and marketing of events, and investigates the legislation surrounding this. Students will be required to plan each stage of an event, considering the suitability of a specific facility, the type of event, and technical, resource and staff requirements. Students will then be expected to run an equine event and evaluate its success upon completion.

This unit develops skills from *Unit 13: Management of Equine Facilities*, allowing students to become more rounded and successful yard managers. Equine events are held in a variety of forms, from lecture demonstrations, displays, competitions and pony camps to tack sales, all of which have varying popularity depending on area and facilities. It is important that those within the industry can recognise the individual strengths of a yard and harness these in the competitive equine industry.

On completion of this unit, students will be able to complete a detailed assessment of facilities and their potential to hold a successful equine event. They will also be able to identify and interpret relevant legislation to ensure the correct planning and running of an event. In addition, students will develop the skills required to market an event and generate income through sponsorship.

Learning Outcomes

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

- 1 Assess the potential of facilities to host a successful equine event
- 2 Interpret relevant legislation to ensure legal obligation is met in event organisation
- 3 Plan and run an equine event to generate profit for an equine facility
- 4 Develop a marketing strategy to promote an equine event.

Essential Content

LO1 Assess the potential of facilities to host a successful equine event

SWOT analysis:

Location, range, standard of facilities, suitability for different events and/or competitions, reputation, capacity, demand for local, regional, national events

Affiliated and unaffiliated events and organisations.

Availability:

Under-utilisation, untapped potential, need for market research, niche and opportunity.

Staff requirements:

Skills profile of available individuals, need for specialists and/or officials, constraints, planning restrictions and local competition

Knowledge of Health and Safety considerations (for horses and riders).

LO2 Interpret relevant legislation to ensure legal obligation is met in event organisation

Technical requirements:

Rules, regulations, expected standards, customer care, competitors, officials, spectators, workers, Health and Safety requirements, risk assessments, COSHH analysis, legislative implications, requirements for trained personnel.

Legal:

Relevant legislation, Health and Safety, accident reporting, RIDDOR, rules on protective equipment, hazard analysis, risk minimisation.

LO3 Plan and run an equine event to generate profit for an equine facility

Requirements for a chosen event:

Facilities, labour, resources, technical planning and organisation, construction and distribution of information/schedules

Organising teams, setting and meeting objectives, timescales, work distribution

Financial planning.

Preparation of facilities:

Efficiency and safety, manning the event on the day, technical aspects, supporting activities, financial aspects, post-event review and evaluation.

Running an equine event:

Team working

Essential preparation

Effective communication

Roles and responsibilities.

LO4 Develop a marketing strategy to promote an equine event.

Marketing strategy:

Promotional plan, target audience, budget allocation.

Advertising:

Definition, purpose, objectives, different techniques, analysis of success, customer response, loyalty cost effectiveness

Use of media, social media

Developing a brand

Unique selling point.

Sponsorship:

Advantages and disadvantages, involvement of sponsors.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Assess the potential of facilities to host a successful equine event			LO1 LO2 D1 Construct a detailed report of an equine facility to appraise its potential in hosting annual equine events in compliance with relevant legislation
P1 Respond to the results of a SWOT analysis to discuss the potential of an equine facility to hold an event		M1 Evaluate an equine facility in detail to identify the USP	
LO2 Interpret relevant legislation to ensure legal obligation is met in event organisation			
P2 Interpret the main features of legislation that will require compliance during an equine event to ensure legal obligations are met		M2 Demonstrate compliance to legislation by identifying specific actions within the planning and running of an event to emphasise best practice	
LO3 Plan and run an equine event to generate profit for an equine facility			LO3 LO4 D2 Critically evaluate the marketing strategy and running of an equine event in generating profit
P3 Plan an equine event to meet prescribed objectives and generate a profit		M3 Perform the running of an event, effectively meeting objectives, prioritising work and allocating workloads within a set timescale	
LO4 Develop a marketing strategy to promote an equine event			
P4 Develop a marketing strategy and supporting marketing material to promote a specific equine event		M4 Describe how sponsorship and custom could be improved through an effective marketing plan	

Recommended Resources

Textbooks

- BARROW, C. (2008) *Business Plan Workbook: The Definitive Guide to Researching, Writing Up and Presenting a Winning Plan*. 6th edn. London: Kogan Page.
- BLADEN, C. et al. (2012) *Events Management: An Introduction*. London: Routledge.
- BLYTHE, J. and MARTIN, J. (2016) *Essentials of Marketing*. 6th edn. Harlow: Pearson.
- BOWDIN, G. et al. (2011) *Events Management*. 3rd edn. Abingdon: Routledge.
- BREGA, J. (2010) *Essential Equine Studies: Book Four: Equine Business Management*. London: J. A. Allen.
- BROWN, J.H. (2010) *Horse Business Management: Managing a Successful Yard*. 4th edn. Oxford: Wiley.
- CERNY, L. (2008) *Horsin' Around: The USA Guide to Marketing and Promoting Your Horse Business*. Indiana: IUUniverse.
- EASTWOOD, S., JENSEN, A-L.R. and JORDON, A. (2006) *Business Management for the Equine Industry*. Oxford: Blackwood.
- JACKSON, N. (2013) *Promoting and Marketing Events: Theory and Practice*. Abingdon: Routledge.
- KOTLER, P. (2012) *Marketing Management*. 2nd edn. London: FT Prentice Hall.
- SMITH, I. (2003) *Meeting Customer Needs*. 3rd edn. Oxford: Butterworth-Heinemann.

Web

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|--|--|
| www.bhs.org.uk | British Horse Society
Event Guidelines
(General reference) |
| www.eventbrite.co.uk | Eventbrite
Event Marketing Strategy:
Timeline, Template and Tactics
(Article) |
| www.thespruce.com | The Spruce
How to Plan and Hold a Horse
Show
(Article) |

Links

This unit links to the following related units:

Unit 12: Horse Husbandry

Unit 13: Management of Equine Facilities

Unit 39: Advanced Equine Performance

Unit code Y/616/7865

Unit level 5

Credit value 15

Introduction

Horses are complex animals that have been utilised for a variety of performance activities for many years. The effective management of horses' fitness, as well as the analysis of movement, are necessary to ensure optimum performance levels are achieved and maintained.

This unit gives detailed knowledge of the physiological effect of exercise and training on the different equine body systems and identifies the necessity to be able to monitor and test levels of fitness and strength within these systems. An understanding of gait, movement and biomechanical analysis will be covered. These are vital to the production of successful performance horses as understanding movement and stride length can influence the ability to perform tasks.

The unit will also allow students to recognise the importance of breed types and characteristics on the ability to perform and distinguish between breeds, and which disciplines would be most suited due to physiological and psychological traits of that breed. Psychology now plays a huge part in performance and an understanding of this is necessary in allowing a horse to perform at its best and considering potential constraints to performance.

This knowledge is vital whether it's for a groom, rider, coach, analyst, behaviourist, breeder or, more specifically, performance analyst.

Learning Outcomes

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

- 1 Analyse physiological systems and testing methodology of a horse in a specific discipline
- 2 Conduct biomechanical analysis of horse movement in a selected discipline
- 3 Describe conformation and breeding attributes to suit disciplines
- 4 Discuss psychological influence for horse and rider on performance.

Essential Content

LO1 Analyse physiological systems and testing methodology of a horse in a specific discipline

Systems:

Skeletal

Endocrine

Cardiovascular

Circulatory

Respiratory.

Key alterations:

Altitude

Peak fitness

Illness

Stress

Age.

Methods of analysis (monitoring fitness):

Blood tests – anaemia, red blood cell count, infection, white blood cell count, muscle enzyme status (AST and CPK), liver enzymes, electrolyte status, Haemoglobin concentration

HR testing, VO₂max, respiratory testing, standard and maximal exercise tests

Bone density testing, force and strength.

Ways in which testing is conducted:

Treadmill

Laboratory testing

Race track

Power plates

Ethical issues with tests.

LO2 Conduct biomechanical analysis of horse movement in a selected discipline

Horses in motion

Alteration in movement due to:

Rider

Injury

Surfaces

Different disciplines (dressage, show jumping, racing, eventing).

Kinematic data collection:

Video analysis

Software used for analysis

Farrier influence.

Static and dynamic assessment

LO3 Describe conformation and breeding attributes to suit disciplines

Conformation:

Faults

Weaknesses

Strengths

Ideals

Suits for different disciplines.

Breed types:

Suitability of breeds for different disciplines

Pedigree/bloodlines (breed tests and grading)

Characters

Stallion selection

Embryo transfer (pros and cons)

Assisted reproductive techniques

Genetic evaluation

Hereditary indices.

LO4 Discuss psychological influences for horse and rider on performance

Psychological influences:

Physical traits

Breed traits

Behaviour modifications

Positive and negative traits

Profile of mood states

Learning process

Rider influence on horse's psychological responses.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Analyse physiological systems and testing methodology of a horse in a specific discipline		D1 Critically analyse testing methods and the impact they have on improving performance, making reference to the ethical implications
P1 Identify the physiological alterations due to acclimatisation, peak fitness, illness, stress, and age of a horse in a selected discipline P2 Discuss methods of monitoring and analysing physiological systems in response to exercise of a horse in a selected discipline	M1 Evaluate the physiological alterations due to acclimatisation, peak fitness, illness, stress, and age of a horse in a selected discipline	
LO2 Conduct biomechanical analysis of horse movement in a selected discipline		LO2 LO3 LO4 D2 Compare and contrast the movement of a horse in a range of gaits and how these are influenced by conformation and breeding
P3 Discuss alterations to gait with/without a rider P4 Collect video evidence of a horse in each gait and discuss its movement patterns	M2 Critically analyse the impact of injury, rider and surface on a horse gait, including over a jump	
LO3 Describe conformation and breeding attributes to suit disciplines		
P5 Compare the ideal conformation of horses from different disciplines P6 Describe the suitability of breed types for different disciplines	M3 Evaluate conformation and breeding attributes to suit a specific discipline.	

Pass	Merit	Distinction
LO4 Discuss psychological influence for horse and rider on performance		
P7 Describe how the psychological state of a horse can positively and negatively affect performance P8 Identify key elements that can impact the psychological state of a horse with regards to performance	M4 Evaluate how a rider can influence the psychological state of a horse in regards to its ability to perform in a selected discipline	

Recommended Resources

Textbooks

HAUSBERGER, M. and RICHARD-YRIS, M.A. (2005) *The Domestic Horse: The Evolution, Development and Management of Its Behaviour*. Cambridge: Cambridge University Press.

HAYES, M. (2002) *Veterinary Notes for Horse Owners*. 18th edn. New York: Simon and Schuster.

HODGSON, D.R., MCGOWAN, C. and MCKEEVER, K. (2013) *The Athletic Horse: Principles and Practice of Equine Sports Medicine*. 2nd edn. Missouri: Elsevier Saunders.

MILLS, D.S. and MCDONNELL, S.M. (2005) *The Domestic Horse: The Origins, Development and Management of its Behaviour*. Cambridge: Cambridge University Press.

PALMER, S. (2016) *Understanding Horse Performance: Brain, Pain or Training*. 1st edn. Marlborough: The Crowood Press Ltd.

RAMZAN, P. (2014) *The Racehorse: A Veterinary Manual*. New York: Taylor & Francis.

VOGEL, C. (2006) *The Complete Performance Horse: Feeding, Fitness, Lameness, Preventive Medicine*. 2nd edn. Exeter: David & Charles.

Journals

VISSER, E.K., VAN REENEN, C.G., HOPSTER, H., SCHILDER, M.B.H., KNAAP, J.H., BARNEVELD, A. and BLOKHUIS, H.J. (2001) 'Quantifying Aspects of Young Horses' Temperament: Consistency of Behavioural Variables'. *Applied Animal Behaviour Science*, vol. 74, no. 4, pp. 241–58.

Links

This unit links to the following related units:

Unit 6: Animal Anatomy and Physiology

Unit 18: Equitation (Riding)

Unit 20: Equestrian Performance

Unit 23: Biological Principles

Unit 37: Equitation II (Riding)

Unit 40: Sustainable Practices

Unit code	D/616/7866
Unit type	Optional
Unit level	5
Credit value	15

Introduction

The concept of sustainability and sustainable practices has many interpretations. For the purpose of this unit, sustainable practices are defined as operations carried out with the minimum impact, allowing those practices to be continued in the long term. Sustainable practices need to be applied to both inputs and outputs from a business. Consideration needs to be given to the resources used in production, the energy used to process those resources and the management of any waste products arising. To secure the future of production, businesses must seek to minimise their negative impacts in carrying out their operations.

This unit will develop the skills required to analyse business activities from the perspective of sustainability. It will allow systems and practices to be reviewed to minimise energy use and waste production, enabling the reduction of negative impacts on the environment. Once practices have been reviewed and impacts minimised, the use of green business credentials in marketing will be explored.

During unit delivery, local and national schemes to which a business can sign up will be identified and eligibility criteria examined. Methods for evaluating a business's environmental impact will also be developed, and opportunities for local sourcing, collective purchasing and transportation and packaging minimisation will be explored. In addition, the application of the waste hierarchy will be explored so that resource waste can be eliminated, and utilising green business credentials will be optimised.

By the end of the unit, students will have developed the skills to review business activities in order to minimise environmental impacts and then utilise the green business credentials in promoting and marketing business activities and products. They will also be able to identify appropriate schemes and initiatives which could support sustainable business aims.

Learning Outcomes

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

- 1 Evaluate the opportunities for applying sustainable practices to business operations
- 2 Analyse business facilities and practices to minimise energy use
- 3 Identify opportunities for waste minimisation and recycling
- 4 Utilise sustainable practices in business promotion.

Essential Content

LO1 Evaluate the opportunities for applying sustainable practices to business operations

All aspects of business practices need to be considered:

Identify opportunities to minimise the risk of loss or damage to land, water and air

Practices which minimise resource requirement need to be explored

Consideration must be given to the sourcing of inputs to ensure they continue to be available for production in the future.

LO2 Analyse business facilities and practices to minimise energy use

Technologies and systems which minimise energy use need to be explored:

Insulation and thermal efficiency of buildings

The adoption of energy efficient production methods

The development of maintenance schedules for equipment

The evaluation of latest technologies for energy saving.

LO3 Identify opportunities for waste minimisation and recycling

Methods of reducing waste need to be explored:

Matching of systems to local circumstances

Stock control to be practised

Avoidance of excess packaging

Use of biodegradable products

Storing and sorting waste products to maximise recycling opportunities

Preventing waste escaping into the wider environment

The waste hierarchy needs to be followed

Non-recyclable waste disposal in accordance with current legislation.

LO4 Utilise sustainable practices in business promotion

Marketing opportunities utilising the business' sustainable reputation need to be developed:

Quality Assurance schemes requiring sustainable practices to be reviewed

Niche marketing to be investigated

Opportunities for spreading sustainable practices up and down the supply chain to be explored.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Evaluate the opportunities for applying sustainable practices to business operations		LO1 LO2 D1 Critically evaluate potential savings and costs from applying sustainable practices
P1 Produce a risk plan of activities and their negative impacts P2 Identify sustainable practices which would reduce the risks P3 Identify sustainable sources for business inputs	M1 Evaluate the impact of the risk plan and viability of changing input sources	
LO2 Analyse business facilities and practices to minimise energy use		
P4 Produce an environmental audit of business premises and practices	M2 Evaluate feasibility of applying technologies	
LO3 Identify opportunities for waste minimisation and recycling		LO3 LO4 D2 Critically evaluate potential savings and costs from applying sustainable practices
P5 Produce a waste management audit for the business	M3 Evaluate waste minimisation opportunities in the local area	
LO4 Utilise sustainable practices in business promotion		
P6 Produce a marketing plan which makes use of the business' environmental credentials	M4 Evaluate own plan against plans of similar businesses	

Recommended Resources

Textbooks

DEFRA. (2009) *Protecting Our Water, Soil and Air: A Code of Good Agricultural Practice for Farmers, Growers and Land Managers*. London: The Stationery Office. [Online] Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268691/pb13558-cogap-131223.pdf

DEFRA. (2011) *Waste Hierarchy Guidance*. London: The Stationery Office. [Online] Available at: <https://www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy>

ESTES, J. (2009) *Smart Green: How to Implement Sustainable Business Practices in Any Industry – and Make Money*. Oxford: Wiley.

HALL, K. (2008) *Green Building Bible, Volume 1: Essential Information to Help You Make Your Home and Buildings Less Harmful to the Environment, the Community and Your Family*. 4th edn. Carmarthenshire: Green Building Press.

Web

www.energysavingtrust.org.uk	The Energy Saving Trust
	Whole site
	(General reference)

Links

This unit links to the following related units:

Unit 2: Business and the Business Environment

Unit 9: Veterinary Practice Management

Unit 21: Management Accounting

Unit 30: Advanced Management Accounting

Unit 41: Work Experience

Unit code	H/616/7867
Unit level	5
Credit value	15

Introduction

A crucial part of a professional's skills, abilities and competences are developed during work, and are refined through practical experiences and 'learning by doing'. Employers rate work experience above all else and the Pearson Higher National qualifications aim to make students work-ready and prepare them with the appropriate balanced skills profile that employers require.

Integral to achieving 'work readiness' is the need for practical application and contextualisation of learning, a perspective that is increasingly sought after by employers. Curriculum that helps students gain real-world, relevant experience in their chosen careers has proven to be an enabler for graduate progression to employment and of considerable value to students' personal and professional development.

This unit aims to enable students to develop personal and professional skills by engaging in practical tasks and activities within a relevant workplace. It is designed to facilitate supervised learning in a workplace that can be fit around full-time or part-time student commitments and enables both an employer as well as an academic supervisor to monitor and support students through a goal-orientated process. **The minimum work experience hours required for completion is 80 hours.**

Students will be given the opportunity to identify and plan their own skills development in line with a chosen career path or direction. It will be expected that students negotiate and agree work experience in an appropriate work context, approved by the employer and academic supervisor. They will monitor and record evidence from the tasks and activities that they undertake, to allow them to evaluate the process and any shortcomings in their development going forward.

Learning Outcomes

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

- 1 Investigate the value and benefits of practical work experience for career and personal development
- 2 Plan suitable and relevant work experience in an appropriate service sector organisation
- 3 Undertake appropriate work experience to develop professional skills and competences
- 4 Evaluate personal skills and competences developed during practical work experiences.

Essential Content

LO1 Investigate the value and benefits of practical work experience for career and personal development

Organisational contexts for career development:

Different service sector sub-sectors and organisational contexts

The key roles and responsibilities found within different service sub-sectors.

Learning and development in work environments:

Academic knowledge versus practical knowledge and skills

Learning theories e.g. Bloom's taxonomy, Gardner's multiple intelligences and Bandura's Social Learning Theory

Concept of application of theory to practice

The benefits of practical learning

Career progression and employer expectations of key employability skills e.g. interpersonal skills, communication skills, critical thinking, presentation skills, leadership skills, teamwork

The importance and value of soft skills to the hospitality industry

Soft skills versus hard skills.

LO2 Plan suitable and relevant work experience in an appropriate service sector organisation

Setting development plans, goals and objectives:

'SMART' planning, writing of goals and objectives

Self-assessment of skills and competences.

Learning and development approaches:

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

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

Preparation tools and techniques for career development:

Looking at job applications, CV and interview preparation

Interview and presentation skills

The importance of understanding the appropriate uniform and dress-code for the job role in relation to the interview process

Service sub-sector-specific equipment and requirements.

LO3 Undertake appropriate work experience to develop professional skills and competences

Carry out planned tasks and activities:

Engagement in tasks e.g. projects, routine duties, operational issues, formal training, legal compliance, process development

People management and leadership

Application of problem-solving, contingency planning, coordinating tasks, teamwork

Professional conduct and behaviours to display whilst working, presenting a brand identity, the importance of uniformity in presentation.

LO4 Evaluate personal skills and competences developed during practical work experiences.

Recording of actions and activities in suitable formats:

Methodical record of experiences gained during work, linked to skills to be developed

Recorded in appropriate methods e.g. journal, logbook, diary, portfolios, online records

Creation of evidence in appropriate formats.

Reviewing and evaluating progress:

Reflection of career development and learning within the work environment e.g. systems, interpersonal skills, problem-resolution, incidents and accidents, teamwork and management practices

Recommendations on how to enhance future development plans e.g. different work context, alternative roles and titles, locations, preparation methods, time management.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Investigate the value and benefits of practical work experience for career and personal development			
P1 Explore and discuss different learning theories that could be used to inform a suitable work experience	P2 Examine the benefits of practical work experience for professional skills and career development	M1 Evaluate a range of different learning theories in practice, to highlight and emphasise the benefits of action-learning for career development	D1 Critically evaluate the benefits of practical action learning to underpin theory and approaches in the work environment
LO2 Plan suitable and relevant work experience in an appropriate service sector organisation			
P3 Construct a development plan for skills and career advancement within a chosen service sector context	P4 Explain a range of tools and techniques that can be used to acquire appropriate work experience within a service sector organisation	M2 Devise an in-depth development plan that provides a detailed outline of the approaches, tools and techniques applied to gain appropriate work experience within a service sector organisation	D2 Analyse and interpret actions, activities and approaches adopted within a structured development plan to gain appropriate work experience within a service sector organisation
LO3 Undertake appropriate work experience to develop professional skills and competences			
P5 Conduct appropriate work experience to develop specific skills for career development whilst producing ongoing evidence of work performance	M3 Examine the development processes within a work context to maximise growth opportunities within the work experience	D3 Critically reflect on development processes within the workplace to establish strengths and weaknesses of the different approaches adopted	

Pass	Merit	Distinction
LO4 Evaluate personal skills and competences developed during practical work experiences.		D4 Justify the evaluation and recommendations of different approaches to enhance development in practice
P6 Evaluate skills, performance and career development to identify areas for future advancement P7 Recommend methods and techniques to enhance development processes within the given service sector work environment	M4 Produce an evidence-based evaluation of work experiences, making actionable and tangible recommendations for enhanced development processes	

Recommended Resources

Textbooks

COSTLEY, C., ELLIOT, G. and GIBBS, P. (2010) *Doing Work-based Research: Approaches to Enquiry for Insider-Researchers*. London: SAGE.

DONE, J. and MULVEY, R. (2011) *Brilliant Graduate Career Handbook*. Harlow: Prentice Hall.

KIRTON, B. (2012) *Brilliant Workplace Skills for Students and Graduates*. Harlow: Prentice Hall.

ROOK, S. (2016) *Work Experience, Placements and Internships*. London: Palgrave.

Web

www.cipd.co.uk	Chartered Institute of Personnel and Development (General reference)
www.mindtools.com	Mind Tools Career Support Resources (General reference)
www.nationalcareersservice.direct.gov.uk	National Careers Service CVs, Skills Health Check (General reference)

Unit 42: Ornamental Aquatics and Fish Keeping

Unit code D/617/8835

Unit level 5

Credit value 15

Introduction

This unit aims to develop student knowledge and understanding of fish biology, aquatic invertebrates and aquatic management, as well as their practical skills in maintaining of aquatic species in appropriate conditions.

In this unit students will explore the factors that an aquarium employee or ornamental fish farmer need to know. The unit focuses on the work involved at an aquarium, aquatic centre, and specialist pet centre or similar, and the ideas in this unit are major considerations for this area of the industry.

Aquaria have been able to establish fish in captivity, for example, the Yellow Tang fish, a species notoriously difficult to breed, by applying knowledge of water requirements and health management strategies. Students will have the opportunity to explore the development of aquaculture techniques.

On successful completion of this unit students will be able to understand the important theoretical knowledge and have practical skills in promoting the welfare of a wide range of different ornamental teleost fish. Upon completion of this unit, students will be well prepared to engage in employment in a fresh water and marine aquarium where they can apply what they have learned.

Learning Outcomes

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

- 1 Describe the taxonomy and biology of ornamental teleost fish
- 2 Demonstrate the establishment, monitoring and maintenance of freshwater and marine aquaria
- 3 Define the reproductive strategies and breeding of ornamental aquatic species
- 4 Review a range of strategies to promote ornamental teleost fish health and welfare.

Essential Content

LO1 Describe the taxonomy and biology of ornamental teleost fish

Classification of teleost fish:

Classification of common ornamental teleost species.

Taxonomy.

Nomenclature.

Key characteristics of common families of teleost fish.

Habitats.

External anatomy:

Structure and function:

Morphology.

Skin.

Mucous.

Scales.

Lateral line.

Fins.

Jaw structures.

Species-specific external features, e.g. barbels.

Internal anatomy:

Structure and function:

Digestive system.

Circulatory system.

Musculoskeletal system.

Nervous system.

Excretory system.

Gills and adaptations to air breathing, e.g. labyrinth organ.

Senses:

Vision.

Hearing.

Chemoreception.

Pressure detection.

Pain.

Range of specialised senses, e.g. electroreception, magnetoreception, weberian apparatus.

LO2 Demonstrate the establishment, monitoring and maintenance of freshwater and marine aquaria

Establishment:

Habitat requirements for a range of common freshwater and marine aquarium systems, e.g. fish only, FOWLR, aquatic invertebrates, corals, plants.

Compatibility.

Cycling and the nitrogen.

Feeding requirements.

Space requirements and stocking density calculations.

Habitat requirements.

Water quality and parameters.

Filtration and filter types.

Heating and thermostats.

Lighting.

Additional equipment, e.g. UV sterilisers, carbon dioxide systems, ozone generators, RO filters.

Monitoring:

Importance of aquarium monitoring.

Record keeping.

Chemical water testing kits.

Water quality checks.

Equipment checks.

Electronic systems.

Health and welfare.

Management:

Importance of aquarium monitoring.

Daily, weekly and monthly maintenance regimes.

Common problems and solutions, e.g. algae bloom, new tank syndrome, cloudy water, pH changes

LO3 Define the reproductive strategies and breeding of ornamental aquatic species

Reproductive strategies of common ornamental teleosts:

R-strategy.

K-strategy.

Ovuliparity.

Ovoviviparity.

Viviparity.

Sexual parasitism.

Hermaphroditism.

Spawning strategies.

Life cycles of a range of common ornamental teleosts.

Genetics:

Common genetic terms, e.g. gene, allele, homozygous, heterozygous, haploid, diploid.

Synchronous and asynchronous hermaphroditism.

Artificial selection for desirable traits.

Inbreeding depression.

Health and welfare issues pertaining to artificial selection.

Breeding:

Range of ornamental freshwater and marine teleosts:

Range of breeding strategies.

Sexing.

Selection of parents.

Preparation and management of breeding and spawning tanks.

Conditioning and nutrition.

Optimising breeding conditions.

Raising fry.

LO4 Review a range of strategies to promote ornamental teleost fish health and welfare

Health monitoring:

Techniques.

Observations.

Physical, physiological and behaviour indicators of health.

Diagnostic techniques.

Health maintenance:

Husbandry and hygiene.

Feeding and nutrition.

Protocols.

Stress avoidance and relief.

Prophylaxis.

Isolation and quarantine.

First aid.

Euthanasia.

Common diseases:

Transmission.

Causal agents.

Signs and symptoms.

Prognosis.

Prevention and treatment.

Notifiable and zoonotic disease implications.

Administering medicaments.

Fish welfare issues:

Assessing fish welfare.

Welfare needs in aquaria.

Welfare issues during transport.

Sourcing fish, e.g. captive bred, wild caught, tank raised.

Ethical implications.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Describe the taxonomy and biology of ornamental teleost fish		D1 Evaluate the importance of a range of specialised senses in fish
P1 Apply the Linnean system of classification to classify a range of common ornamental teleosts to genus level P2 Describe how the external anatomy of fish aids survival in an aquatic environment P3 Explain how the structure of fish body systems relates to their function	M1 Analyse the sensory systems of fish	
LO2 Demonstrate the establishment, monitoring and maintenance of freshwater and marine aquaria		
P4 Demonstrate the monitoring and maintenance of a tropical freshwater aquarium for a given period of time P5 Demonstrate the monitoring and maintenance of a marine aquarium for a given period of time	M2 Analyse the equipment requirements for freshwater and marine aquaria	D2 Design aquaria for specified communities of freshwater and marine species
LO3 Define the reproductive strategies and breeding of ornamental aquatic species		D3 Plan a breeding management programme for one ornamental freshwater and one ornamental marine fish species
P6 Explain the life cycles of at least three teleost species P7 Discuss the welfare issues related to the selective breeding of ornamental teleosts, using at least three examples	M3 Analyse a range of breeding strategies to determine their advantages and disadvantages	

Pass	Merit	Distinction
LO4 Review a range of strategies to promote health and welfare of ornamental teleost fish		D4 Assess the impact of zoonotic and notifiable conditions and outbreak management
P8 Report on health monitoring carried out for a given period of time P9 Describe a range of health management techniques P10 Explain the causes and effects of common diseases, their prevention and treatment	M4 Analyse the relationship between correct husbandry and fish health	

Recommended Resources

Textbooks

Blanchard, Z (2014) *Saltwater and Reef Tanks: From Beginner to Expert*, USA: CreateSpace Independent Publishing Platform

Bone, Q and Moore, R (2008) *The Biology of Fishes: 3rd Edn*, London: Routledge.

Burton, B and Burton M (2017) *Essential Fish Biology: Diversity, Structure and Function*, Oxford: Oxford University Press.

Gay, J (2005) *The Perfect Aquarium: The Complete Guide to Setting Up and Maintaining and Aquarium*, London: Hamlyn

Hargrove, M and Hargrove M (2006) *Freshwater Aquariums for Dummies*, Hoboken: John Wiley and Sons.

Helfman, G et al (2009) *The Diversity of Fish: Biology, Evolution and Ecology*, Oxford: Wiley Blackwell.

Skomel, G (2007) *Saltwater Aquariums for Dummies*, Hoboken: John Wiley and Sons.

Wildgoose, W (2001) *BSAVA Manual of Ornamental Fish*, UK: British Small Animal Veterinary Association

Links

This unit links to the following related units:

Unit 14: Management of Exotic Animal Species

Unit 23: Biological Principles

Unit 33: Animal Breeding and Genetics

Unit 43: Behavioural Approaches to Animal Management

Unit code K/618/8641

Unit level 5

Credit value 15

Introduction

Animal welfare has never been so prominent across all sectors of the animal industry along with heightened public awareness of animal welfare issues. It is strongly linked to animal needs and the behaviours that animals demonstrate. This unit provides students with the opportunity to explore how considerations for the welfare of animals can be informed and managed through understanding the evolutionary basis of animal behaviours and consultation of scientific literature, supporting careers across the animal management, pet industries and agriculture.

The unit aims to provide an overview of the links between animal behaviour and biology, and how management strategies for both captive and wild animals are informed by robust scientific research. There is focus on the use of scientific theory to assess welfare as well as more recent advances in research into topics such as the application of animal personality and higher-level cognitive ability to the management of animals. Students will have the opportunity to develop skills considering different points of view for well-informed debate of contemporary issues in animal behaviour.

The unit will cover physiological control mechanisms including evolutionary genetics, biological clocks and homeostasis, enabling a greater understanding of the underpinning causes of behaviour. Displayed survival and social behaviours in a range of species are explored from an evolutionary perspective along with theories and concepts around animal psychology and cognition. The monitoring and interpretation of animal behaviour and cognition to produce valid research studies is examined, and how these can be used effectively to promote high standards of animal welfare.

An appreciation of the scientific basis of animal behaviour will allow advanced application of animal behaviour theory to many current issues faced in industry. Upon successful completion of this unit, students will be able to use scientific evidence to support decisions made for managing animals in captive and wild environments, allowing them to be well-prepared for employment in a range of sectors in the animal industry.

Learning Outcomes

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

- 1 Explore principles of evolution and biological control in relation to animal behaviour
- 2 Investigate key aspects of animal survival and reproductive behaviours for animal management and welfare
- 3 Analyse theories and concepts of social animal behaviour for animal management and welfare
- 4 Evaluate the study of psychology and complex behavioural theories in the management of captive and wild animals.

Essential Content

LO1 Explore principles of evolution and biological control in relation to animal behaviour

Evolutionary genetics, adaptive behaviours and external control:

Evolution, natural selection and genetic drift

Adaptive behaviour

Environmental factors

Anthropogenic factors

Endocrine control and biological clocks:

Role of hormones within the body for bonding and aggression

Seasonal and cyclic behaviours

The biological clock and application to animal management

Interrelationship of behaviour and homeostasis:

Principles of homeostasis and feedback systems

Behavioural adaptations to changing environments

Homeostatic behaviour in diet selection and zoopharmacognosy

LO2 Investigate key aspects of animal survival and reproductive behaviours for animal management and welfare

Interspecific interactions and relevance to animal management and welfare:

Feeding and predation behaviours

Predator-prey cycles

Animal signals and camouflage, types of mimicry

Reproductive behaviours and relevance to animal management and welfare:

Sexual and asexual behaviour

Mating strategies

Courtship, bonding and parental care

Intra-specific competition and Leks

Theories of sexual selection and relevance to animal management and welfare:

Inter-sexual selection

Direct and indirect benefits to choosy females

Theories of evolution of secondary sexual traits

LO3 Analyse theories and concepts of social animal behaviour for animal management and welfare

Roles, benefits and limitations of different types of communicative behaviour and relevance to animal management and welfare:

Methods of communication

Honest signals

Evolutionary deceptions

Intraspecific social interaction and relevance to animal management and welfare:

Types of social interaction

Benefits and costs of group living

Importance of hierarchy structures and territorial behaviour

Kin selection and altruism:

Types of altruism seen in animals

Kin selection and inclusive fitness

Eusocial behaviour

LO4 Evaluate the study of psychology and complex behavioural theories in the management of captive and wild animals

Approaches to monitoring and interpretation of animal behaviour:

Methods and equipment used for monitoring behaviours

Criteria for drawing valid inferences from scientific studies

Assessment of quality of published research

Theories and use of evidence from scientific literature to support strategies for the management and welfare of captive and wild animals:

Choice tests and application

Motivation, preference and aversion testing

Higher level cognition, to include emotion and self-awareness

Personality variation

Welfare indicators

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explain principles of evolution and biological control in relation to animal behaviour			D1 Critically analyse how evolution, regulatory mechanisms and reproductive behaviours in animals affects animal management welfare practices
P1 Explain the evolutionary processes that shape behavioural traits		M1 Assess how regulatory mechanisms affect evolved animal behaviour	
P2 Explain the internal and external factors that control an animal's behaviour			
LO2 Investigate key aspects of animal survival and reproductive behaviours for animal management and welfare			
P3 Explain different types of interspecific interactions seen in animals		M2 Analyse survival and reproductive behaviours of animals	
P4 Discuss different types of mating strategies seen in animals			
LO3 Analyse theories and concepts of social animal behaviour for animal management and welfare			D2 Critically justify animal management strategies for promoting animal welfare based on the study of captive and wild animal behaviour and cognition
P5 Discuss different forms of communication behaviours used by animals		M3 Analyse the role of social behavioural requirements on animal management and welfare	
P6 Explain the role of social structures in animal species			
LO4 Evaluate the study of psychology and complex behavioural theories in the management of captive and wild animals			
P7 Evaluate methods for monitoring captive and wild animal behaviour		M4 Analyse the bases for animal management and welfare strategies in captive and wild animals	
P8 Explain how behavioural testing is used to monitor and improve captive and wild animal welfare			

Recommended Resources

Textbooks

Appleby, D. (2016) *The APBC Book of Companion Animal Behaviour*. London: Souvenir Press Ltd

Dugatkin, L. (2013) *Principles of Animal Behavior*. 3rd edition. W.W. Norton & Co.

Davies, N; Krebs, J and West, S (2012) *An Introduction to Behavioural Ecology*. 4th edition.

Hoboken:Wiley-Blackwell

Price, E. (2008) *Principles & Applications of Domestic Animal Behaviour*. Wallingford:CABI Press

Rubenstein, D. R., Alcock, J.(2018) *Animal Behaviour*. 11th edition. Sunderland (MA): Sinauer Associates

Shettleworth, S. (2010) *Cognition, Evolution, and Behaviour*. 2nd edition. New York: Oxford University Press

Websites

<https://academic.oup.com/beheco>

Behavioural Ecology journal (Research)

<https://www.journals.elsevier.com/animal-behaviour>

Animal Behaviour journal (Research)

<https://onlinelibrary.wiley.com/journal/14390310>

Ethology journal (Research)

Links

This unit links to the following related units:

Unit 4: Animal Behaviour in Society

Unit 23: Biological Principles

Unit 26: Evolution and Adaptations

Unit 44: Humanisation of Companion Animals

Unit code M/618/8642

Unit level 5

Credit value 15

Introduction

The circumstances in which pet owners consider their pet and the relationship with their pet as if it were human in nature is a growing trend. This unit will look at the intimacy between people and animals throughout history and cultures to the present day, human companion animal bond and its effect on human health. The theories and concepts surrounding the human need for a companion animal will be studied as well as the factors involved in the choice of animal and the impact on animal related businesses, in particular the veterinary profession.

This unit will allow students to examine the anthropomorphic attitude to animals, the biophilia hypothesis and human animal bonding with animals as human kin. The psychological impacts of pet keeping, from the choice of pet to the role within the household and social media links, will be investigated. Approaching and coming to terms with the death of an animal and the effect of bereavement on human health is a significant area which will be analysed as well as the long term impact of caring for chronically ill animals.

The topics covered in this unit include the history of human-animal relationships, the theories involved and the factors determining the humanisation of an animal. The impact and overall effect of losing an animal treated as human kin will be studied.

Students will develop skills of philosophical discussion, non-judgemental evaluation and critical analytical reviewing of corresponding articles / literature apropos the humanisation of animals past and present. The knowledge acquired will be of benefit to working within animal nursing, rescue and rehabilitation, animal exercise and day care, animal grooming and physiotherapy.

Learning Outcomes

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

- 1 Explore the development of human-companion animal relationships and supporting theories
- 2 Investigate the physical and psychological requirements of animals treated as human kin
- 3 Evaluate the effect of animal bereavement on human health and wellbeing
- 4 Evaluate the impact of humanisation of animals in relation to the keeping of companion animals as pets.

Essential Content

LO1 Explore the development of human-companion animal relationships and supporting theories

History of human and companion animal interaction across different cultures:

Extrapolation of companion animals kept in different cultures, including indigenous tribes

Historical pet keeping and the human animal relationship

Sociological reasons for the increase in companion animals over past decades.

Anthrozoological theories:

Animals as intellectual instigator / philosophical catalyst

Anthropocentrism

Egocentrism

Zoomorphism

Anthropomorphism and its effects on animality

Biophilia hypothesis

Attachment theory / biological control e.g. the role of oxytocin in human animal bonding.

LO2 Investigate the physical and psychological requirements of animals treated as human kin

Companion animals as human kin and the domains of animals into a human substitute:

Definitions of companion animal, human kin and domains in respect of growth and change e.g. physical, cognitive, language and social-emotional development.

Neotony and James Sharpell's The Cute Response i.e. the physical requirements of companion animals as kin.

The physical effects of different species and husbandry requirements on the human animal relationship e.g. size, colour, gender, individual animal personality and species requirements

The role of anthromorphism in the physical requirement for human animal bonding.

Intersubjectivity of human companion animal relationships and personhood:

A psychological self-object / surrogate child / adult / human

Position and role in the family unit including sociological family rituals

The impact of social media

Human choices of names, grooming styles and dressing the animal.

LO3 Evaluate the effect of animal bereavement on human health and wellbeing

Stages involved in the death of an animal:

Acceptance of imminent death

Human grief associated with bereavement and mourning the loss of animal

Factors affecting the human response when the animal human bond is broken

i.e. emotional, physical and behavioural consequences

Impact on human health and wellbeing.

Decision making:

Euthanasia and the veterinary practice

Disposal of body

Species specific legislation

Cold death theory

Animal funeral / cemeteries

Different cultural / religious approaches

Methods of remembrance.

LO4 Evaluate the impact of humanisation of animals in relation to the keeping of companion animals as pets

The effects on human animal relationships:

Human aspirations including financial, emotional, behavioural, familial and societal

Over reliance

Caring/killing paradox

Veterinary practices

Animal hoarding i.e. animals / breeds seen as collectable

Zoonosis

Giving up and rehoming

Detachment

Transgression theory

Ethical issues e.g. physical, psychological, health, stress, financial effect of long-term care for a sick/disabled animal.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explore the development of human-companion animal relationships and supporting theories			LO1 LO2 D1 Critically evaluate theories supporting the history of human – animal relationships across different cultures and how attitudes have changed over time
P1 Explore anthropomorphism and anthropocentric in the development of human-animal relationships P2 Examine the reasons for humanising animals		M1 Analyse how the biological control of the animal bond has been researched and measured	
LO2 Investigate the physical and psychological requirements of animals treated as human kin			
P3 Investigate how and why animals are treated as human kin		M2 Compare the physical and psychological factors influencing the humanisation of companion animals	
LO3 Evaluate the effect of animal bereavement on human health and wellbeing			LO3 LO4 D2 Critically analyse the ethical implications from the humanisation of companion animals kept as pets
P4 Discuss the stages of bereavement and grief experienced by humans P5 Assess the impact the death of a companion animal has on human health and wellbeing		M3 Determine the various options for dealing with a dying companion animal before and after death	
LO4 Evaluate the impact of humanisation of animals in relation to the keeping of companion animals as pets			
P6 Evaluate the overall effect of the humanisation of companion animals to society		M4 Evaluate the financial implications to the owner of humanising their companion animal	

Recommended Resources

Textbooks

BRADSHAW, J. (2017) *The Animals Among Us: The New Science of Anthrozoology*. Allen Lane. UK.

BRADSHAW, J. (2012) *In Defence of Dogs: Why Dogs Need Our Understanding*. Penguin. UK.

BRADSHAW, J. (2014) *Cat Sense: The Feline Enigma revealed*. Penguin. UK.

FRANKLIN, A. (2008) *Animals and modern culture: a sociology of human-animal relations in modernity*. Sage. London.

FREUD, L.S. and McCUNE, S. (2016) *The Social Neuroscience of Human-Animal Interaction*. London: Academic Press.

HERZOG, H. (2011). *Some We Love, Some We hate, Some We Eat: Why it's hard to think straight about animals*. Harper Collins Publishers. London.

HURN, S. (2012) *Humans and Other Animals: Cross-Cultural Perspectives on Human-Animal Interactions (Anthropology, Culture and Society)* Pluto Press. London.

PODBERSCEK, A., PAUL, E. & SERPELL, J. (2005) *Companion animals and us: exploring the relationship between people and pets*. Cambridge University Press. Cambridge.

MANNING, A. and SERPELL, J. (2011) *Animals and human society: changing perspectives*. (eds). Routledge. Oxford.

OLMERT, M.D. (2009) *Made for each other: the biology of the human-animal bond*. Da Capo Press. Boston USA.

SERPELL, J. (1996) *In the company of animals: a study of human-animal relationships*. Cambridge University Press. Cambridge.

Websites

<http://www.apa-hai.org/>

Human-Animal Interaction.
(General reference)

<https://www.theguardian.com/commentisfree/2017/oct/16/we-treat-our-pets-as-people-is-it-because-its-getting-harder-to-have-faith-in-humans>

We treat our pets as people.
(Report)

<https://juniperpublishers.com/jdvs/pdf/JDVS.MS.ID.555659.pdf>

Pet Humanisation: what is it and does it influence purchasing behaviour.
(Article)

<https://www.vettimes.co.uk/news/increasing-humanisation-killing-pets-with-kindness/>

Increasing humanisation 'killing pets with kindness'.
(Article)

<https://www.thegrocer.co.uk/trend-reports/pampered-pets-are-britains-dogs-and-cats-winning-their-place-at-the-human-dinner-table/559832.article>

Pampered pets! Are Britain's dogs and cats winning their place at the dinner table?
(Report)

Links

This unit links to the following related units:

Unit 4: Animal Behaviour in Society

Unit 19: Horse and Human Relationship

Unit 36: Ethics and Consultation

Unit 45: Habitat Restoration and Repair

Unit code M/616/8052

Unit level 5

Credit value 15

Introduction

The survival of specialist species depends on the provision of high-quality habitats. Habitats that have become degraded need to be restored, and, in many cases, new habitats must be created. The impacts on habitats globally from agriculture, forestry and urban development are well documented and the importance of restoring these habitats, particularly where they may benefit humans, has now led to the relatively new discipline of restoration ecology.

The purpose of this unit is to enable students to develop their knowledge and understanding of the processes of habitat restoration and creation. The unit will draw on current research and best practice from restoration projects across the globe. Students will critically evaluate the effectiveness of these techniques in terms of their ecological value and will gain an understanding of the wider benefits of successful habitat restoration projects.

The content of the unit explores the rationale for restoring and creating habitats and provides a thorough review and analysis of the techniques available. Considerable emphasis is placed upon the selection of appropriate species for habitat creation programmes.

By the end of the unit students will be able to assess habitats and make recommendations for their improvements to meet biodiversity, ecosystem and social objectives.

Learning Outcomes

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

1. Explain the strategic importance of habitat restoration and repair
2. Evaluate the principles involved in the creation and restoration of habitats
3. Evaluate appropriate species for habitat restoration and creation
4. Assess land use options for a range of habitat types.

Essential content

LO1 Explain the strategic importance of habitat restoration and repair

UK habitats:

Overview

Geographical influences and distribution

Plagioclimax communities

Communities

Post-glacial development of UK habitats

Human influences e.g. concept and development of semi-natural habitats, habitat degradation and fragmentation

Habitat restoration e.g. definition and concept, reasons and rationale for habitat restoration, assessing potential for restoration, Site of Special Scientific Interest, National Parks, NNRs, LNRs, AONBs, Improvement Programme

LO2 Evaluate principles involved in the restoration and creation of habitats

Natural and human-induced restoration:

Natural habitat restoration

Habitat creation

Role and processes of ecological succession

Natural regeneration e.g. invasive species

Human-induced habitat restoration and creation

Habitat management, hierarchy management, restoration, creation Habitat restoration techniques

Habitat creation techniques

Critical evaluation of restoration and creation techniques.

LO3 Evaluate appropriate species for habitat restoration and creation

Biotic and abiotic systems:

Assessment of major components

Abiotic (soil, geology, topography, latitudinal light, temperature variation, climate and weather)

Biotic (intraspecific relationships, interspecific relations)

Choosing species - consideration of species provenance, matching species with site's abiotic and biotic features (population interactions).

LO4 Assess land use options for a range of habitat types.

Management of semi-natural habitats:

Management methods post-restoration/creation - burning, cutting, grazing, chemical methods, Health and Safety considerations

Impacts of management and monitoring e.g. methods

Recording systems

Analysis of data and the importance of long-term management

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explain the strategic importance of habitat restoration and repair.			LO1 LO2 D1 Evaluate the need and potential for restoration management.
P1 Describe the variety of habitats present within a specified area.	M1 Assess the degree of fragmentation of semi-natural habitats.		
P2 Describe the role of human management in the establishment of semi-natural habitats.			
LO2 Evaluate the principles involved in the creation and restoration of habitats.			
P3 Explain the role that ecological succession has within plagioclimax community maintenance.	M2 Justify the need for human-induced restoration and creation techniques.		D2 Evaluate individual species and population interactions with one another and with the abiotic environment.
P4 Describe the difficulties associated with managing new habitats.			
LO3 Evaluate appropriate species for habitat restoration and creation.			
P5 Undertake a pre-management survey of the main abiotic and biotic components of the site.	M3 Justify appropriate species required for habitat restoration or creation.		
LO4 Assess land use options for a range of habitat types.			D3 Evaluate the potential impacts of a management technique on a given habitat.
P6 Implement the correct after-care management of a site (post-recreation/creation).	M4 Discuss the need for long-term management in the maintenance of semi-natural habitats.		

Recommended resources

Textbooks

BLAKESLY, D. and BUCKLEY, P. (2016) *Grassland Conservation and Management*. Exeter: Pelagic Publishing.

LODWICK, L. (2013) *Creative Habitat Restoration: Comprehensive: Planning, Implementation and Long Term Management*. Bethlehem: Lehigh University Press.

RONI, P. (2012) *Stream and Watershed Restoration: A Guide to Restoring Riverine Processes and Habitats*. New Jersey: Wiley Blackwell.

SCHORDER, H.G. (2008) *Grasslands: Ecology, Management and Restoration*. New York: Nova Science Publishers.

WALKER, L.R, WALKER, J. and HOBBS, R. (2007) *Linking Restoration and Ecological Succession*. New York: Springer New York.

Websites

www.cieem.net	Chartered Institute of Ecology and Environmental Management Homepage (General reference)
www.gov.uk	GOV.UK Natural England (General reference)
www.gov.uk	GOV.UK Habitat Restoration (General reference)
www.journals.elsevier.com	Elsevier Biological Conservation (Journal)
www.legislation.gov.uk	Legislation.GOV.UK Wildlife and Countryside Act 1981 (Legislative Act)
www.ser.org	Society for Ecological Restoration Homepage (General reference)

Links

This unit links to the following related units:

Unit 48: Environmental Management and Conservation

Unit 46:

Woodland Management

Unit code	H/616/7982
Unit level	5
Credit value	15

Introduction

Good woodland management has multiple benefits. It can provide additional income to a business, maximise wildlife benefit and enhance the landscape. Whether creating new areas of woodland or managing existing woods, to achieve optimum results it is essential to correctly apply the appropriate principles and practices. It is not economically viable to contract out the management of small areas of woodland so developing the skills to look after woodland alongside other business activities will be a great advantage.

The purpose of this unit is to develop the skills and knowledge to make both appropriate management decisions and to be able to undertake the hands-on work.

This unit will cover woodland establishment management and harvesting, and explore uses of woodland and wood products. Students will develop the theoretical and practical management skills, learning how to select appropriate species for stocking, the management cycle, how to assess woodland conditions and when to make interventions.

Learning Outcomes

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

1. Assess the methods of and conditions for establishing woodlands
2. Evaluate woodland management options and select those appropriate to achieving objectives
3. Apply industry standard techniques to assess woodland condition and quality
4. Identify markets and uses for woodlands and woodland products.

Essential content

LO1 Assess the methods of and conditions for establishing woodlands

Methods and conditions:

Select species based on soil type, location and objectives

Consider native/non-native species for stocking

Decide on establishment techniques (planting or natural regeneration)

Consider site preparation based on conditions, selected establishment method and resources

Identify protection methods for newly established woodlands appropriate to scale of site and threat

LO2 Evaluate woodland management options and select those appropriate to achieving objectives

Management options:

Consider the condition of the woodland if already established and the desired objectives of management

Conifer management/broadleaf management

Priorities e.g. commercial timber, conservation, recreation

Stage of growth cycle/quality

Markets for thinnings/end point markets

Coppice or standards

Management constraints (site size, location, aspect, designations)

Cost/benefit

Harvesting options

LO3 Apply industry standard techniques to assess woodland condition and quality

Assessment techniques:

Visual assessment

Qualitative and quantitative methods

Surveys used of forest mensuration methodologies

Use of measurement equipment (girthing tapes, clinometers, software)

LO4 Identify markets and uses for woodlands and woodland products.

Markets and uses:

Markets for different products (thinnings, final crop, coppice products)

Construction timber, pulp, fire wood, veneer

On-site processing, off-site sales

Additional uses of woodland sites (recreation activities, sporting activities, education activities, burials)

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Assess the methods of and conditions for establishing woodlands.		LO1 LO2 D1 Critically evaluate woodland management proposals in line with feasibility and good practice.
P1 Produce a site appraisal. P2 Identify suitable species and establishment methods. P3 Plan preparation methods to suit site.	M1 Evaluate cost/benefits of proposals.	
LO2 Evaluate woodland management options and select those appropriate to achieving objectives.		
P4 Produce a comparison of management options for a given area.	M2 Justify the preferred management option.	
LO3 Apply industry standard techniques to assess woodland condition and quality.		LO3 LO4 D2 Critically evaluate the feasibility of achieving optimum return on the given woodland.
P5 Undertake an assessment of a given woodland.	M3 Evaluate the pros and cons of alternative assessment methods.	
LO4 Identify markets and uses for woodlands and woodland products.		
P6 Produce a marketing plan which optimises the use of a given woodland and its products.	M4 Analyse alternative uses and markets.	

Recommended resources

Textbooks

BLAKSLEY, D. and BUCKLEY, P.G. (2010) *Managing Your Woodlands For Wildlife*. Newbury: Pisces Publications.

EVANS, J. and ROLLS, W. (2015) *Getting Started in Your Own Wood*. Petersfield: Permanent Publications.

FORESTRY COMMISSION (2017) *The UK Forestry Standard: The Government's Approach to Sustainable Forestry*. Edinburgh: Forestry Commission.

HARMER, R. and HOWE, J. (2003) *Silviculture and Management of Coppice Woodlands*. Edinburgh: Forestry Commission.

KERR, R., HARMER, G. and THOMPSON, R.W. (2004) *Managing Native Broadleaved Woodland*. Edinburgh: Forestry Commission.

MATTHEWS, R.W. and MACKIE, E.D. (2013) *Forest Mensuration*. 2nd edn. Edinburgh: Forestry Commission.

SAVILL, P. (2013) *The Silviculture of Trees*. 2nd edn. Wallingford: CABI.

STARR, C. (2013) *Woodland Management – A Practical Guide*. Marlborough: The Crowood Press.

Links

This unit links to the following related units:

Unit 25: Tree Care and Arboricultural Management

Unit 27: Environmental Management and Conservation

Unit 47: Conservation and Biodiversity

Unit code L/617/5400

Unit level 5

Credit value 15

Introduction

Although life on Earth is ancient, the concept of biodiversity is a much more recent idea, introduced in the 1980's. There is considerable evidence for a global crisis for the environment and biodiversity provides a measure of the health of an ecosystem as well as a way to estimate monetary value of an area and so form links with its economic potential.

Conservation of biodiversity is necessary to limit the environmental damage done by human activities. Assessment of biodiversity aims to inform conservation policy to decrease species extinction.

The aim of this unit is to provide students with knowledge and understanding of the living environment, the principles of conservation and the importance of biodiversity, as a measure of ecosystem health

Students will explore the different methods of conservation, and their applications. The unit will cover the effectiveness of conservation and measures of biodiversity both descriptive and quantitative. The contribution of biodiversity to economic growth and industry will be considered.

The unit will equip students with a solid foundation of the concept of biodiversity and its conservation. Students will gain a broad view of conservation as a tool for entry to careers in estate management, environmental science and those sectors of industry that require an environmental profile. The unit will inform students to consider the impact of food production and their own role in environmental change.

Learning Outcomes

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

- 1 Review theories that account for the creation of biodiversity
- 2 Explore theories that account for the loss of biodiversity
- 3 Apply methods to assess biodiversity
- 4 Investigate methods for the conservation of biodiversity.

Essential Content

LO1 Review theories that account for the creation of biodiversity.

Creation of biodiversity:

The evolution of biodiversity

Evolutionary science

Diversification of species

Speciation.

The ecology of biodiversity:

Primary factors; history and age, geographical and physical

Ecosystem integrity and health

Speciation

Disturbance and succession

Dispersal and colonisation.

LO2 Explore theories that account for the loss of biodiversity

Extinction:

Causes of extinction

Estimating and predicting extinction

Despeciation

Ecosystem loss: destruction of habitat, pollution.

Effect of humans:

Human pressures on biodiversity, population growth and globalisation

Proximate causes

Ultimate causes: attitude, resource use

Economic impact of biodiversity.

LO3 **Apply methods to assess biodiversity**

Defining types of biodiversity:

Genetic methods such as protein electrophoresis, sequencing of nucleic acid and mapping

Taxonomic diversity (three-domain hierarchy and DNA).

Quantifying biodiversity:

Number of known species

Number of alleles in a population

Sampling

Problems of bias and estimation

Global patterns

Contribution of ecosystems.

LO4 **Investigate methods for the conservation of biodiversity**

Evolving concepts:

Funding sources and issues

Social, cultural and political factors

Role of protected areas (areas of outstanding natural beauty, national parks)

In situ and ex situ conservation.

The role of legislation:

International treaties, biotechnology rights and regulated trade

National legislation

Genetic resources

Species protection

Regulating damaging activities.

LO4 could be taught by using examples local to, or familiar to, the student cohort.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Review theories that account for the creation of biodiversity			D1 Critically evaluate factors that can contribute to ecosystem integrity
P1 Illustrate definitions of species diversity using named examples	P2 Review ecological factors that control biodiversity	M1 Account for the role of biodiversity to ecosystem health	
LO2 Explore theories which account for the loss of biodiversity			D2 Evaluate opportunities to protect and promote biodiversity in a specific target area
P3 Explore the role of human activities in the loss of species		M2 Account for the continuing loss of species despite human intervention	
LO3 Apply methods to assess biodiversity			D3 Critically analyse data sets to suggest ways in which biodiversity could be increased
P4 Explore measures of biodiversity	P5 Analyse data to assess biodiversity	M3 Evaluate data on biodiversity to draw justified conclusions	
LO4 Investigate methods for conservation of biodiversity			D4 Critically evaluate the effectiveness of in situ and ex situ methods of conservation of named species to preserving biodiversity in protected areas
P6 Review legislation, treaties and funding and their effect on conservation of biodiversity		M4 Explore the role of attitude and culture to the success of conservation programmes	

Recommended resources

Textbooks

BOENIGK, J., WODNIOK, S., GLUCKSMAN, E. (2015) *Biodiversity and Earth History*. Berlin and Heidelberg: Springer-Verlag GmbH.

BROMHAM, L., CARDILLO, M. (2019) *Origins of Biodiversity: An Introduction to Macroevolution and Macroecology*. Oxford: Oxford University Press.

HAMBLER, C. (2013) *Conservation*. 2nd ed. Cambridge: Cambridge University Press.

JEFFRIES, M.J. (2006) *Biodiversity and Conservation*. London and New York: Routledge.

LOVEJOY, T.E., HANNAH, L., WILSON, E.O. (2019) *Biodiversity and Climate Change: Transforming the Biosphere*. New Haven, CT: Yale University Press.

Web

hindawi.com/journals/ijbd	Hindawi, open access The International Journal of Biodiversity (Research)
bdj.pensoft.net	Pensoft – science publisher The Biodiversity Data Journal (Research)
link.springer.com/journal/10531	Springer Link Journal: Biodiversity and Conservation (Research)
soilassociation.org	The Soil Association (General reference)
wildlifetrusts.org	The Wildlife Trusts (General reference)
worldwildlife.org	World Wildlife Fund (General reference)

Links

This unit links to the following related units:

Unit 8: Ecological Principles

Unit 48: Environmental Management and Conservation

Unit 50: Endangered Species Conservation

Unit 52: Plant Identification and Classification

Unit 48: Environmental Management and Conservation

Unit code D/616/7981

Unit level 5

Credit value 15

Introduction

It is no longer acceptable or desirable to solely focus on production without considering environmental management and conservation. There are a number of reasons for this. Firstly, environmental legislation makes it a legal requirement and in many cases this is backed up by being a requisite to accessing support funds where available. The environment provides ecosystem services such as pollination and natural pest control. It therefore makes common sense to effectively manage the environment to maximise these. In addition, as a result of intensive production practices, many once common species are becoming rare, and rare species are being driven to extinction. We have a responsibility to play our part in reversing this trend.

This module will develop the skills required to assess the status of habitats on holdings and then develop management plans which take into consideration constraints of land use and legal requirements. The unit will also develop appropriate monitoring and evaluation methodologies to allow the impact of management practices and conservation activities to be assessed for both positive and negative impacts on habitats.

Habitat assessments will be undertaken, drawing on base-line data and practical on-site surveys. The surveys will be appropriate to the scale and importance of the site and resources available. Drawing on examples from well-managed sites, management plans will be developed to maintain or improve site conditions as appropriate. Different monitoring and evaluation methodologies will be evaluated and impact reports produced.

By the end of the unit students will be able to accurately assess the condition of ecologically significant sites on holdings. They will be able to produce management plans which will be effective and meet legal requirements and monitor and evaluate the impact of management prescriptions on habitats.

Learning Outcomes

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

1. Assess the status of habitats on holdings
2. Produce plans to maintain or improve their condition
3. Monitor the impact of conservation actions
4. Evaluate environmental management practice.

Essential content

LO1 Assess the status of habitats on holdings

Assess habitats:

Using key species records, identify if they are still present on-site and make an estimate of numbers

Assess whether species are healthy and thriving or under pressure

From records, evaluate loss of conservation areas to production

LO2 Produce plans to maintain or improve their condition

Develop plans to conserve and prevent decline:

Drawing on examples from local areas, develop plans to conserve and prevent decline in the quality of conservation areas

Incorporate the principles of integrated land management in plan development

Positive non-intervention is an option.

LO3 Monitor the impact of conservation actions

Undertake impact monitoring:

Needs to be appropriate to the scale of individual sites

Suitable to identify if objectives are being met

Feasible within resource constraints

The methodology needs to be clearly recorded, capable of replication and preferably compatible with any previous site monitoring results

LO4 Evaluate environmental management practice.

Undertake the evaluation of environmental management plans:

Management practices need to be evaluated from both the perspective of pure conservation and the impact of husbandry practices on environmental conservation

Environmental management practices need to be species and habitat specific, and appropriate to the scale of the site

They need to consider any site or species' protected status and current legislation.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Assess the status of habitats on holdings		LO1 LO2 D1 Critically evaluate environmental management plans and their impact on site management.
P1 Produce a species survey of two sites, including any locally significant species, and compare the results to similar local sites to produce a basic assessment.	M1 Interpret the significance of the assessment in relation to local biodiversity action plans.	
LO2 Produce plans to maintain or improve their condition		
P2 Produce management plans for the areas surveyed.	M2 With reference to other local sites, evaluate the proposed management prescriptions.	
LO3 Evaluate environmental management practices		LO3 LO4 D2 Discuss how own management plans contribute to improving the wider environmental condition.
P3 Drawing on given case studies, produce a report identifying three environmental management practices which could be applied to chosen sites.	M3 Define the predicted impacts of the management practices.	
LO4 Evaluate environmental management practice.		
P4 Plan a monitoring programme for selected sites.	M4 Evaluate own programmes and discuss alternative methodologies which could have been applied.	

Recommended resources

Textbooks

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

DICKS, L.V., ASHPOLE, J.E., DÄNHARDT, J., JAMES, K., JÖNSSON, A., RANDALL, N., SHOWLER, D.A., SMITH, R.K., TURPIE, S., WILLIAMS, D. and SUTHERLAND, W.J. (2013) *Farmland Conservation: Evidence for the Effects of Interventions in Northern and Western Europe*. London: Pelagic Publishing.

MACDONALD, D.W. and FEBER, R.E. (2015) *Wildlife Conservation on Farmland Volume 1*. Oxford: Oxford University Press.

MACDONALD, D.W. and FEBER, R.E. (2015) *Wildlife Conservation on Farmland Volume 2*. Oxford: Oxford University Press.

SUTHERLAND, W.J. and HILL, D.A. (1995) *Managing Habitats for Conservation*. Cambridge: Cambridge University Press.

Websites

www.banc.org.uk

British Association of Nature
Conservation

ECOS journal
(Research)

Links

This unit links to the following related units:

Unit 46: Woodland Management

Unit 40: Sustainable Practices

Unit 49: 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, particularly when they have been mined from the earth in the first instance. 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 such management has on an organisation will also be ascertained.

On successful completion of this unit, the student will be cognisant of the potential impact consumerism, public attitudes and the importance of environmental matters has 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:

- 1 Explain the environmental issues connected with the biosphere
- 2 Identify the pressures on the environment from utilising finite resources
- 3 Identify the pressures on the environment from utilising renewable resources
- 4 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 CO₂

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

Green-house 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 for 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

Green-house 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 in 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; freshwater

International specification – ISO14001.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Explain the environmental issues connected with the biosphere			D1 Investigate the issues surrounding climate change and the potential to limit its impact
P1 Explain the concept of an Anthropocene era and suggest whether this is a valid descriptor of the present era	M1 Assess the outcomes arising when an imbalance in the hydrological cycle occurs		
P2 Describe the importance of ocean health in maintaining and regulating the biosphere			
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	M2 Assess the use of shale gas as an energy source, including its advantages and disadvantages and the legislation and regulations surrounding its extraction		
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			
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	M3 Assess the impact on the land in the production of renewable resources		
P6 Describe the issues associated with battery and fuel cell development			
LO4 Explore the challenges for manufacturers and businesses aiming to improve their environmental management credentials			

Pass	Merit	Distinction
<p>P7 Assess the importance of waste management in managing environmental resources</p> <p>P8 Describe the importance to a business of adopting a standard such as ISO14001</p>	<p>M4 Evaluate the impact global environmental protocols and agreements have had on environmental sustainability</p>	<p>D3 Justify the steps that must be taken by a manufacturer or business in a given sector to improve its environmental management credentials</p>

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., PEAKE, S. (2011) *Energy Systems and Sustainability: Power for a Sustainable Future*. 2nd ed. Oxford: Oxford University Press.

FENNER, A., 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)

Irqa.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 8: Ecological Principles**Unit 35: Wildlife Conservation*

Unit 40: Sustainable Practices

Unit 50: Endangered Species Conservation

Unit 51: Principles of Ecology and their Applications

Unit 50: Endangered Species Conservation

Unit code F/650/4374

Unit level 4

Credit value 15

Introduction

Many animal species are becoming extinct across the world each day, reducing the global fauna and affecting the delicate balance of ecosystems. International collaboration between conservation organisations is working towards the valuable goals of monitoring and preserving numbers of endangered species in the wild and implementation of captive breeding programmes to assist in repopulation of species, as well as educating and informing the public.

The aim of this unit is to provide a foundation of knowledge and understanding of the factors affecting how and why animal species are classified as endangered and the remits, roles and regulation of animal conservation organisations. Students will investigate in-situ and ex-situ conservation programmes and the tools used for designing breeding programmes. Students will also gain awareness of the issues faced by the implementation of these programmes.

On completion of this unit, students will have gained understanding of the complexities involved in managing populations of species threatened with extinction. They will have developed skills in how to design breeding programmes to increase the numbers of an endangered species and knowledge of key organisations working in collaboration to do so. This will give them the skills required for roles working in zoos and animal conservation organisations, as well as giving them underpinning knowledge for further study.

Learning Outcomes

- 1 Examine the threat status of animal species to determine conservation requirements
- 2 Investigate the scope of in-situ and ex-situ conservation programmes in the conservation of endangered species
- 3 Design a breeding programme intended for effective conservation of endangered animals
- 4 Identify current issues facing the successful conservation of endangered species

Essential Content

LO1 Examine the threat status of animal species to determine conservation requirements

Terminology surrounding endangered species, e.g.

Extinction, island syndrome, conservation status, de-extinction, functionally extinct, viable populations, biodiversity hotspots, biodiversity action plan (BAP), flagship species, protected areas, Ramsar sites, wildlife corridors, IUCN Red List of Threatened Species.

Ethical issues surrounding animal species loss, e.g.

Habitat loss, poaching, trophy hunting.

Current relevant legislation around conservation in local, national and international contexts, including protecting animal species, wildlife and wild places and regulation of animal movement from place to place, e.g.

Convention on International Trade in Endangered Species (CITES), The Wildlife and Countryside Act 1981, The Convention on Migratory Species (CMS or Bonn Convention), Convention on Wetlands of International Importance (Ramsar Convention).

LO2 Investigate the scope of in-situ and ex-situ conservation programmes in the conservation of endangered species

Roles and remits of local, national and international organisations involved in conservation of endangered animals

International Union for Conservation of Nature (IUCN) Species Survival Commission, Global Species Action Plan (GSAP), local and national wildlife and animal species protection groups.

In-situ and ex-situ strategies in conserving endangered species

Factors affecting success of conservation programmes. e.g. conservation of habitats and ecosystems, monitoring, maintaining and recovering viable species populations, translocation, assisted colonisation.

Benefits and drawbacks of conservation programmes.

LO3 Design a breeding programme intended for effective conservation of endangered animals

Captive breeding programmes

Purposes, content, factors affecting likely success, (e.g., logistics, ease of breeding, in situ versus ex situ), record keeping (e.g. types of information, recording methods and structure).

Designing captive breeding programmes

Use of software programs, e.g. Zoo Information Management System (ZIMS).

International cooperation

The collaboration, cooperation and agreements in place between animal collections and conservation organisations in planning and implementation of conservation programmes, e.g. British and Irish Association of Zoos and Aquariums (BIAZA), European Association of Zoos and Aquaria (EAZA), World Association of Zoos and Aquariums (WAZA), Zoological Society of London (ZSL).

LO4 Identify current issues facing the successful conservation of endangered species

Issues affecting the planning of conservation efforts

Socioeconomic and political factors, e.g. sources and funding of conservation programmes, governmental agendas and priorities, war, natural disasters.

Issues affecting the implementation of conservation efforts

Ethical considerations around use of endangered animals, e.g. traditional medicine, food, trade.

Human–wildlife interactions, e.g. between dangerous wild animals and human populations, land requirements for housing and agriculture.

Learning Outcomes and Assessment Criteria

Pass		Merit	Distinction
LO1 Examine the threat status of animal species to determine conservation requirements			D1 Assess the success of strategies in conserving endangered animals in terms of the principles, ethical issues and legislation involved in programme implementation.
P1 Define key terms in the conservation of animal species.	P2 Examine the main principles, ethical issues and legislation involved in conserving endangered animals.	M1 Analyse the principles, ethical issues and legislation involved in conserving endangered animals.	
LO2 Investigate the scope of in-situ and ex-situ conservation programmes in the conservation of endangered species			
P3 Examine the characteristics of in-situ and ex-situ conservation programmes for endangered species.	P4 Investigate in-situ and ex-situ conservation programmes for endangered species.	M2 Analyse the factors affecting the success of a conservation programme in the conservation of an endangered species.	D3 Design a complex breeding programme for the effective conservation of endangered animals, and evaluate the rationale behind the breeding programme, incorporating issues affecting successful conservation of endangered animals.
LO3 Design a breeding programme intended for effective conservation of endangered animals			
P5 Design a breeding programme intended for effective conservation of endangered animals.	P6 Examine the input of collaborating organisations on the planning of a breeding programme.	M3 Design a detailed breeding programme intended for effective conservation of endangered animals.	
LO4 Identify current issues facing the successful conservation of endangered animals			
P7 Identify current issues affecting the implementation of endangered animal conservation.		M4 Explain current issues affecting the successful conservation of endangered animals.	

Recommended Resources

Textbooks

BRAUDE, S., LOW, B (2010) *An Introduction to Methods and Models in Ecology, Evolution, and Conservation Biology*. Princeton: Princeton University Press.

HUNTER, M., GIBBS, J., POPESCU, V. (2021) *Fundamentals of Conservation Biology*. 4th edition. Hoboken: Wiley-Blackwell.

SHUMAKER, R.W. (2020) *Saving Endangered Species: Lessons in Wildlife Conservation from Indianapolis Prize Winners*. 1st edition. Baltimore: Johns Hopkins University Press.

Journals

Biological Conservation - ScienceDirect

Conservation Biology – Society for Conservation Biology

Journal of Animal Ecology – British Ecological Society

Journal of Zoo and Aquarium Research – An EAZA Publication

Journal of Zoo and Wildlife Medicine – BioOne Complete

Websites

cites.org/eng	Convention on the International Trade of Endangered Species
iucn.org/	International Union for Conservation of Nature (IUCN)
worldwildlife.org/initiatives/wildlife-conservation	World Wildlife Fund (WWF)
zsl.org/conservation	Zoological Society of London (ZSL)

Links

This unit links to the following related units:

Unit 14: Management of Exotic Animal Species

Unit 33: Animal Breeding and Genetics

Unit 35: Wildlife Conservation

Unit 45: Habitat Restoration and Repair

Unit 51: Principles of Ecology and their Applications

Unit 51: 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 together 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:

- 1 Explain how ecology is the study of interactions between organisms and their environment
- 2 Identify a variety of biomes and interpret their differences
- 3 Explain the factors that disturb the ecological balance in a given ecosystem
- 4 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

Pass		Merit	Distinction
LO1 Explain how ecology is the study of interactions between organisms and their environment			
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	M1 Analyse how the interactions between the physical and biotic components of an ecosystem determine the success of an organism or species	D1 Provide an evaluation of the physical and biotic factors which enable the existence and function of a given ecosystem	
LO2 Identify a variety of biomes and interpret their differences			
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	M2 Differentiate the environmental components which define two separate biomes	D2 Compare two specific biomes and analyse their differences	

Pass		Merit	Distinction
LO3 Explain the factors that disturb the ecological balance in a given ecosystem			D3 Evaluate the future cost of continuing to exploit natural resources
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		
LO4 Explore ways to restore the balance in a degraded ecosystem.			D4 Explore, making justified recommendations, how the appreciation of natural assets could help drive conservation and restoration work of the future
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		

Recommended Resources

Textbooks

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

BEGON, M., HOWARTH, R., TOWNSEND, C.R. (2014) *Essentials of Ecology*. 4th ed. Oxford: John Wiley & Sons Ltd.

BEGON, M., TOWNSEND, C.R., HARPER, J.L. (2006) *Ecology from Individuals to Ecosystems*. 4th ed. Oxford: Blackwell Publishing.

MACKENZIE, A., BALL, A.S., 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 8: Ecological Principles

Unit 35: Wildlife Conservation

Unit 52: Plant Identification and Classification

Unit code	D/616/8046
Unit type	Core
Unit level	4
Credit value	15

Introduction

Plant identification is an essential part of horticulture and many other disciplines in the Land-based sector. Plants form the basis of all of the Earth's ecosystems and all life on Earth depends on plants. The study of plants therefore encompasses a huge range of inter-related scientific disciplines. As such, researchers, producers and retailers in agriculture, horticulture and conservation biology need to develop skills and understanding in plant identification and classification.

In this unit, students will learn about the wide range of plant types and species, and will be introduced to the concept of nomenclature. They will develop the skills needed to identify a range of important plant families and species and to recognise plant types and forms.

Plant classification and taxonomy features strongly throughout the unit and students will be able to recognise the characteristics of the main plant groups. The use of identification keys and of Latin as a common language for plant nomenclature will provide a strong vocational element to this unit and students will develop their confidence in articulating and recording plant species. The Learning Outcomes reflect the skills and knowledge that are currently required by commercial breeders, professional horticulturists, the agricultural sector and those working in the environmental field. An introduction to plant legislation will also enable students to appreciate the international context of plant breeding and collections.

On completion of the unit, students will have confidence in their ability to identify plants from a wide range of families using a variety of identification systems.

Learning Outcomes

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

1. Manage the identification and classification of plants
2. Identify and classify plants
3. Assess how to manage the identification and classification of plants
4. Analyse the legislative implications relating to managing the identification and classification of plants.

Essential content

LO1 Manage the identification and classification of plants

Plant nomenclature:

Family

Genus

Species

Subspecies

Variety

Cultivar

Form

Synonyms

Management e.g. responsible plant sourcing, concepts of sustainability, liaison with relevant organisations, effective use of plant collections to promote sites and engage communities, interpretation, historic significance, events, a range of genera and species, increasing awareness and access to plants on-site, management of native flora and fauna, management of competition, plant pests, disease invasion and action to control

Plant recording e.g. purpose and requirements, recording systems, ledgers, index cards, paper forms, notebooks, use of spreadsheets, national databases, use of International Transfer Format for Botanic Gardens Plant Records (ITF), labelling

Plants e.g. evergreens, conifers, deciduous, coastal, native and exotic trees and shrubs, herbaceous, perennials, annuals, shade tolerant and woodland plants, aquatic species, alpine, arid and ephemerals, native and non-native, invasive species.

LO2 Identify and classify plants

Use of plant keys:

Online keys

Random or multi-access keys

Dichotomous keys

Specialist textbooks

Visual guides

AIDGAP keys (Aid to the Identification of Difficult Groups of Animals and Plants)

Use of glossaries and specialist language

Use of Latin as international language

Use of the binomial system.

LO3 Assess how to manage the identification and classification of plants

Relevant organisations and the use of Latin as international language:

National Council for the Conservation of Plants and Gardens (NCCPG) Royal Botanical Gardens, Kew

Botanic Gardens Conservation International (BGCI)

Royal Botanic Garden, Edinburgh

National Institute of Agricultural Botany (NIAB)

The National Arboretum, Westonbirt

International Plant Exchange Network (IPN)

Plantlife

National Botanic Gardens of Wales

Plant naming e.g. use of the binomial system, Linnaean system, Angiosperm Phylogeny Group (APG), difficulties of common names and regional variations

Identification

Use of plant collections

Arboretums

Plant collection organisation

Herbariums and their purpose

Plant collectors.

LO4 Analyse the legislative implications relating to managing the identification and classification of plants.

Legislation:

Convention on International Trade in Endangered Species of Wild Fauna and Flora

Convention on Biological Diversity (CBD)

Invasive Species Legislation

Wildlife and Countryside Act 1981

Countryside and Rights of Way Act 2000

Biodiversity Action Plans.

Plant registration:

Systems and requirements

Plant Breeder's Rights (PBR)

Plant Variety Rights Office.

Learning Outcomes and Assessment Criteria

Pass	Merit	Distinction
LO1 Manage the identification and classification of plants.		LO1 LO2 D1 Evaluate plant collections and horticultural practices and their impact on wild flora and fauna.
P1 Discuss plant species within a selected site including common flora. P2 Describe and select a plant record system appropriate to a site. P3 Assess any invasive species and recommend appropriate action.	M1 Discuss the heritage, conservation and amenity value of plants on-site.	
LO2 Identify and classify plants		
P4 Select plant identification and classification keys. P5 Explain plant morphology in relation to habitat requirements.	M2 Classify 200 plants taxonomically.	
LO3 Assess how to manage the identification and classification of plants.		LO3 LO4 D2 Analyse the rationale for using a plant nomenclature system and international binomial system.
P6 Identify and apply relevant information from organisations.	M3 Explain botanical nomenclature as it relates to current and correct use of taxonomic terms.	
LO4 Analyse the legislative implications relating to managing the identification and classification of plants.		
P7 Assess the relevant legislative requirements affecting plant sourcing, propagation and distribution. P8 Examine the requirements and restrictions relating to plant breeder's rights.	M4 Critically evaluate the current systems and procedures relating to the registration of new plant varieties.	

Recommended resources

Textbooks

- BRICKELL, C. (2010) *RHS Encyclopaedia of Plants and Flowers*. London: Dorling Kingsley.
- CULLEN, J. (2006) *Practical Plant Identification: Including a Key to Native and Cultivated Flowering Plants Families in North Temperate Regions: Including a Key to Flowering Plants in North Temperate Regions*. Cambridge: Cambridge University Press.
- DAWSON, P. (2006) *A Handbook for Horticultural Students*. Illinois: Peter Dawson Publishing.
- ELPEL, J.T. (2013) *Botany in a Day: The Pattern Method of Plant ID*. Pony: HOPS Press.
- HARRIS, J. and HARRIS, M. (2001) *Plant Identification Terminology: An Illustrated Glossary*. Santaquin: Spring Lake Publishers Payson.
- HARRISON, L. (2012) *RHS Latin for Gardeners: Over 3000 Plant Names Explained and Explored*. London: Mitchell Beazley Publishing.
- REMAGINO, P., MAYO, S. and WILKIN, P. (2016) *Computational Botany: Methods for Automated Species Identification*. New York: Springer Publishing.
- ROSE, F. and O'REILLEY, C. (2006) *The Wildflower Key*. London: Penguin Books.

Websites

- | | |
|--------------|---|
| apps.kew.org | Kew Royal Botanical Gardens
World Checklist of Selected Plant Families
(2017)
(General reference) |
| www.ipni.org | The International Plant Names Index
Homepage
(General reference) |
| www.kew.org | Kew Royal Botanical Gardens
Electronic plant identification resources at
Kew gardens
(General reference) |

www.sciencedirect.com	ScienceDirect
	Horticultural Plant Journal (Journal)
www.ishs.org	ISHS International Society for Horticultural Science
	eJHS (Journal)
www.springer.com	Springer
	Journal of Classification (Journal)

Links

This unit links to the following related units:

Unit 47: Conservation and Biodiversity

Unit 48: Environmental Management and Conservation

Unit 49: Managing Environmental Resources

Unit 53: 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:

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

- 1 Use different classification systems to identify British wildlife
- 2 Examine the changing history of British wildlife
- 3 Investigate the management of British wildlife species and their habitats
- 4 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.

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.

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

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 if 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 of change in conservation outcomes, reporting project success to document how 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

Pass	Merit	Distinction
LO1 Use different classification systems to identify British wildlife		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.
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.	M1 Analyse the use of traditional, evolutionary and conservation classification for a named, threatened British animal species.	
LO2 Examine the changing history of British wildlife		
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.	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.	

LO3 Investigate the management of British wildlife species and their habitat		LO3 and LO4 D2 Evaluate own integrated planning, practical activities and monitoring for the conservation, rehabilitation or re-wilding 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., 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., HARPER, L. (2018). *Guide to Flowers of Walks and Waysides*. Telford: Field Studies Council Publications.

FARLEY-BROWN, R., 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 35: Wildlife Conservation

Unit 45: Habitat Restoration and Repair

Unit 47: Conservation and Biodiversity

Unit 48: Environmental Management and Conservation

Unit 50: Endangered Species Conservation

Unit 51: Principles of Ecology and their Applications

Unit 52: Plant Identification and Classification.

11 Appendices

Appendix 1: Mapping of HND in Animal Management against FHEQ Level 5

Key	
KU	Knowledge and Understanding
CS	Cognitive Skills
AS	Applied Skills
TS	Transferable Skills

The qualification will be awarded to students who have demonstrated:

FHEQ Level 5 descriptor		Animal Management HND Programme Outcome
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 external animal industries environment and its impact upon 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 upon the external environment.
	KU4	A critical understanding of the ethical, legal, professional, and operational frameworks within which the animal industries operate.

FHEQ Level 5 descriptor		Animal Management HND Programme Outcome
	KU5	A critical understanding of processes, procedures and practices for effective management of products, services and people.
	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 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.	CS1	Apply knowledge and understanding of essential concepts, principles and models within the contemporary global animal industries.
	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.

FHEQ Level 5 descriptor		Animal Management HND Programme Outcome
	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.
	CS2	Develop different strategies and methods to show how resources (human, financial and information) are integrated and effectively managed to successfully meet objectives.
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.
	KU9	Knowledge and understanding of how the animal industries influence the development of people and businesses.
	CS5	Critique a range of animal management technology systems and operations, and their application, to maximise and successfully meet strategic objectives.
	KU10	An understanding of the appropriate techniques and methodologies used to resolve real-life problems in the workplace.

FHEQ Level 5 descriptor		Animal Management HND Programme Outcome
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.

Typically, holders of the qualification will be able to:

FHEQ Level 5 descriptor		Animal Management HND Programme Outcome
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.
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.
	AS5	Locate, receive and respond to a variety of information sources (e.g. textual, numerical, graphical and computer-based) in defined contexts.
	TS6	Demonstrate strong interpersonal skills, including effective listening and oral communication skills, as well as the associated ability to persuade, present, pitch and negotiate.
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 Continuing Professional Development to enhance competence to practise within a chosen animal industries field.
	TS8	Take advantage of available pathways for Continuing Professional Development through higher education and Professional Body Qualifications.

Holders will also have:

FHEQ Level 5 descriptor		Animal Management HND Programme Outcomes
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, evaluate and verify existing theory.
	CS8	Evaluate the changing needs of the animal industries and have confidence to self-evaluate and undertake additional CPD as necessary.
	TS12	Emotional intelligence and sensitivity to diversity in relation to people and cultures.

Appendix 2: HNC/HND Animal Management 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
2	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
5	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		
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			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	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			X	X		
12	X	X	X	X		X	X				X		X		X	X	X				X		X			X	X	X	X			X	X		X

	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
13	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
14	X	X	X	X		X	X				X		X			X	X				X		X			X	X	X	X			X	X		X
15	X	X	X	X		X	X				X	X	X		X	X	X				X		X	X		X	X	X	X			X	X		X
16	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X			X		X			X	X	X				X	X		X
17	X		X			X	X				X		X		X		X		X	X	X	X	X			X	X	X			X	X	X		
18	X		X			X	X				X		X			X	X				X		X	X		X	X	X	X	X		X	X		X
19	X		X			X	X				X		X		X	X	X				X		X			X	X	X	X			X	X		X
20	X		X			X	X				X		X	X	X	X	X				X		X	X		X	X	X	X	X		X	X	X	
21	X		X		X	X	X			X	X	X	X	X		X	X		X		X	X	X	X		X	X				X	X	X	X	
22	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

	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	
23	X		X			X	X				X		X			X	X				X		X			X	X		X			X	X		X	
24	X		X			X	X	X			X		X			X	X	X		X	X	X	X	X	X	X	X	X				X	X	X		
25	X		X	X		X	X				X		X			X	X				X		X			X	X	X	X				X	X		X
26	X	X	X			X	X		X		X		X			X	X				X		X			X	X	X	X				X	X	X	X
27	X		X			X	X				X		X		X	X	X				X		X	X		X	X		X			X	X			
28	X		X			X	X				X		X		X	X	X				X		X	X		X	X		X			X	X			
29	X		X	X		X	X			X	X		X			X	X			X	X		X	X		X	X	X	X			X	X		X	
30	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		
31	X		X	X		X	X				X		X			X	X				X		X			X	X		X			X	X		X	
32	X		X	X		X	X				X		X		X	X	X				X		X			X	X	X	X			X	X		X	
33	X	X	X	X		X	X		X		X		X			X	X				X		X			X	X		X			X	X		X	
34	X		X	X	X	X	X			X	X		X	X			X		X	X	X	X	X			X	X	X	X			X	X		X	

	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	
35	X	X	X	X		X	X		X		X		X			X	X				X		X			X	X	X	X			X	X	X	X	
36	X		X	X		X	X		X		X		X			X	X				X		X			X	X	X	X			X	X		X	
37	X		X			X	X			X	X		X		X	X	X				X		X	X		X	X	X	X	X		X	X			
38	X		X	X		X	X			X	X	X	X	X			X		X	X	X	X	X	X		X	X	X	X			X	X		X	
39	X		X			X	X			X	X		X	X	X	X	X				X		X	X		X	X	X	X	X		X	X	X	X	
40	X	X	X			X	X		X		X		X			X	X				X		X			X	X	X	X			X	X		X	
41	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	
42	X		X	X		X	X		X		X		X			X	X				X		X			X	X	X	X			X	X		X	
43	X		X	X	X	X	X	X					X	X	X					X	X	X	X	X							X	X			X	
44	X		X	X					X	X	X	X				X	X	X					X	X				X	X	X				X	X	
45	X		X		X	X	X			X	X	X	X	X		X	X		X		X	X	X	X		X	X				X	X	X	X		
46	X		X	X		X	X				X		X		X	X	X				X		X			X	X	X	X			X	X		X	
47																																				
48	X		X	X		X	X				X		X			X	X				X		X			X	X		X			X	X		X	
49																																				
50	X				X	X	X	X					X	X					X	X	X	X	X					X	X	X			X	X	X	
51																																				
52	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			
53	X		X	X	X				X	X	X	X	X					X	X	X				X	X		X				X	X				X

Appendix 3: Glossary of terms used for internally assessed units

This is a summary of the key terms used to define the requirements within units.

Term	Definition
Analyse	<p>Present the outcome of methodical and detailed examination either:</p> <ul style="list-style-type: none"> • breaking down a theme, topic or situation in order to interpret and study the interrelationships between the parts and/or • of information or data to interpret and study key trends and interrelationships. <p>Analysis can be through activity, practice, written or verbal presentation.</p>
Apply	<p>Put into operation or use.</p> <p>Use relevant skills/knowledge/understanding appropriate to context.</p>
Arrange	Organise or make plans.
Assess	Offer a reasoned judgement of the standard/quality of a situation or a skill informed by relevant facts.
Calculate	Generate a numerical answer with workings shown.
Compare	<p>Identify the main factors relating to two or more items/situations or aspects of a subject that is extended to explain the similarities, differences, advantages and disadvantages.</p> <p>This is used to show depth of knowledge through selection of characteristics.</p>
Compose	Create or make up or form.
Communicate	<p>Convey ideas or information to others.</p> <p>Create/construct skills to make or do something, for example a display or set of accounts.</p>
Create/ Construct	Skills to make or do something, for example, a display or set of accounts.
Critically analyse	Separate information into components and identify characteristics with depth to the justification.

Term	Definition
Critically evaluate	Make a judgement taking into account different factors and using available knowledge/experience/evidence where the judgement is supported in depth.
Define	State the nature, scope or meaning.
Describe	Give an account, including all the relevant characteristics, qualities and events.
Discuss	Consider different aspects of a theme or topic, how they interrelate, and the extent to which they are important.
Demonstrate	Show knowledge and understanding.
Design	Plan and present ideas to show the layout/function/workings/object/system/process.
Develop	Grow or progress a plan, ideas, skills and understanding
Differentiate	Recognise or determine what makes something different.
Discuss	Give an account that addresses a range of ideas and arguments.
Evaluate	<p>Work draws on varied information, themes or concepts to consider aspects, such as:</p> <ul style="list-style-type: none"> • strengths or weaknesses • advantages or disadvantages • alternative actions • relevance or significance. <p>Students' inquiries should lead to a supported judgement showing relationship to its context. This will often be in a conclusion. Evidence will often be written but could be through presentation or activity.</p>
Explain	To give an account of the purposes or reasons.
Explore	Skills and/or knowledge involving practical research or testing.
Identify	Indicate the main features or purpose of something by recognising it and/or being able to discern and understand facts or qualities.
Illustrate	Make clear by using examples or provide diagrams.
Indicate	Point out, show.
Interpret	State the meaning, purpose or qualities of something through the use of images, words or other expression.
Investigate	Conduct an inquiry or study into something to discover and examine facts and information.

Term	Definition
Justify	Students give reasons or evidence to: <ul style="list-style-type: none"> • support an opinion • prove something is right or reasonable.
Outline	Set out the main points/characteristics.
Plan	Consider, set out and communicate what is to be done.
Produce	To bring into existence.
Reconstruct	To assemble again/reorganise/form an impression.
Report	Adhere to protocols, codes and conventions where findings or judgements are set down in an objective way.
Review	Make a formal assessment of work produced. The assessment allows students to: <ul style="list-style-type: none"> • appraise existing information or prior events • reconsider information with the intention of making changes, if necessary.
Show how	Demonstrate the application of certain methods/theories/concepts.
Stage and manage	Organisation and management skills, for example, running an event or a [Sector] pitch.
State	Express.
Suggest	Give possible alternatives, produce an idea, put forward, for example, an idea or plan, for consideration.
Undertake/ carry out	Use a range of skills to perform a task, research or activity.

This is a key summary of the types of evidence used for Pearson BTEC Higher Nationals:

Type of evidence	Definition
Case study	A specific example to which all students must select and apply knowledge.
Project	A large scale activity requiring self-direction of selection of outcome, planning, research, exploration, outcome and review.
Independent research	An analysis of substantive research organised by the student from secondary sources and, if applicable, primary sources.
Written task or report	Individual completion of a task in a work-related format, for example, a report, marketing communication, set of instructions, giving information.
Simulated activity/role play	A multi-faceted activity mimicking realistic work situations.
Team task	Students work together to show skills in defining and structuring activity as a team.
Presentation	Oral or through demonstration.
Production of plan/Business plan	Students produce a plan as an outcome related to a given or limited task.
Reflective journal	Completion of a journal from work experience, detailing skills acquired for employability.
Poster/leaflet	Documents providing well-presented information for a given purpose.

Appendix 4: Assessment methods and techniques for Pearson BTEC Higher Nationals

Assessment technique	Description	Transferable skills development	Formative or Summative
Academic graphic display	This technique asks students to create documents providing well-presented information for a given purpose. Could be a hard or soft copy.	Creativity Written communication Information and communications Technology Literacy	Formative Summative
Case study	This technique present students with a specific example to which they must select and apply knowledge.	Reasoning Critical thinking Analysis	Formative Summative
Discussion forum	This technique allows students to express their understanding and perceptions about topics and questions presented in the class or digitally, for example, online groups, blogs.	Oral/written communication Appreciation of diversity Critical thinking and reasoning Argumentation	Formative

Assessment technique	Description	Transferable skills development	Formative or Summative
Independent research	This technique is an analysis of research organised by the student from secondary sources and, if applicable, primary sources.	Information and communications technology Literacy Analysis	Formative
Oral/Viva	This technique asks students to display their knowledge of the subject via questioning.	Oral communication Critical thinking Reasoning	Summative
Peer review	This technique asks students to provide feedback on each other's performance. This feedback can be collated for development purposes.	Teamwork Collaboration Negotiation	Formative Summative
Presentation	This technique asks students to deliver a project orally or through demonstration.	Oral communication Critical thinking Reasoning Creativity	Formative Summative

Assessment technique	Description	Transferable skills development	Formative or Summative
Production of an artefact/ performance or portfolio	This technique requires students to demonstrate that they have mastered skills and competencies by producing something. Some examples are [Sector] plans, using a piece of equipment or a technique, building models, developing, interpreting, and using maps.	Creativity Interpretation Written and oral communication Interpretation Decision-making Initiative Information and Communications Technology Literacy, etc.	Summative
Project	This technique is a large scale activity requiring self-direction, planning, research, exploration, outcome and review.	Written communication Information Literacy, Creativity, Initiative.	Summative

Assessment technique	Description	Transferable skills development	Formative or Summative
Role playing	This technique is a type of case study, in which there is an explicit situation established, with students playing specific roles, understanding what they would say or do in that situation.	Written and oral communication Leadership Information literacy Creativity Initiative.	Formative
Self-reflection	This technique asks students to reflect on their performance, for example, to write statements of their personal goals for the course at the beginning of the course, what they have learned at the end of the course and their assessment of their performance and contribution; completion of a reflective journal from work experience, detailing skills acquired for employability.	Self-reflection Written communication Initiative Decision-making Critical thinking	Summative
Simulated activity	This technique is a multi-faceted activity based on realistic work situations.	Self-reflection Written communication Initiative Decision-making Critical thinking	Formative Summative

Assessment technique	Description	Transferable skills development	Formative or Summative
Team assessment	<p>This technique asks students to work together to show skills in defining and structuring an activity as a team.</p> <p>All team assessment should be distributed equally, each of the group members performing their role, and then the team collates the outcomes, and submits it as a single piece of work.</p>	<p>Collaboration</p> <p>Teamwork</p> <p>Leadership</p> <p>Negotiation</p> <p>Written and oral communication</p>	Formative Summative
Tiered knowledge	<p>This technique encourages students to identify their gaps in knowledge. Students record the main points they have captured well and those they did not understand.</p>	<p>Critical thinking</p> <p>Analysis</p> <p>Interpretation</p> <p>Decision-making</p> <p>Oral and written communication</p>	Formative

Assessment technique	Description	Transferable skills development	Formative or Summative
Time constrained assessment	This technique covers all assessment that needs to be done within a centre-specified time constrained period on-site.	Reasoning Analysis Written communication Critical thinking Interpretation	Summative
Top ten	This technique asks students to create a 'top ten' list of key concepts presented in the assigned reading list.	Teamwork Creativity Analysis Collaboration	Formative
Written task or report	This technique asks students to complete an assignment in a structured written format, for example, a [Sector] plan, a report, marketing communication, set of instructions, giving information.	Reasoning Analysis Written communication Critical thinking, interpretation.	Summative

Appendix 5: Transferable skills mapping

Pearson BTEC Level 4 Higher National Certificate in Animal Management: mapping of transferable employability and academic study skills

Skill Set	Cognitive skills							Intra-personal Skills				Interpersonal Skills		
Unit	Problem-solving	Critical Thinking/ Analysis	Decision-making	Effective Communication	Digital Literacy	Numeracy	Creativity	Plan Prioritise	Self-management	Independent learning	Self-reflection	Teamwork	Leadership	Cultural Awareness
1		X	X	X				X	X	X	X			
2		X		X	X			X	X	X				X
3	X	X	X	X	X		X	X	X	X	X	X	X	
4		X	X	X				X	X					X
5	X	X	X	X		X		X	X	X	X	X	X	X
6	X	X	X	X	X	X		X	X	X				
7	X		X	X	X	X		X	X	X	X			X
8		X		X	X		X	X	X	X	X	X		X
9	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

Skill Sets	Cognitive skills							Intra-personal Skills				Interpersonal Skills		
Unit	Problem-solving	Critical Thinking/Analysis	Decision-making	Effective Communication	Digital Literacy	Numeracy	Creativity	Plan Prioritise	Self-management	Independent learning	Self-reflection	Team work	Leadership	Cultural Awareness
11	X	X	X	X		X	X	X	X	X	X		X	X
12	X	X	X					X	X	X	X	X	X	X
13	X		X	X		X	X	X	X	X	X		X	X
14	X		X	X	X	X		X	X	X	X			X
15			X	X	X	X	X	X	X	X	X		X	X
16	X	X	X	X		X		X	X	X	X	X	X	X
17	X	X	X	X	X		X	X	X	X	X			X
18	X	X	X	X			X	X	X	X	X		X	X
19	X		X	X			X	X	X	X	X		X	X
20		X	X	X	X	X		X	X	X	X			X
21	X			X	X	X		X	X	X	X			X
22	X	X	X	X	X		X	X	X	X	X		X	X

Pearson BTEC Level 5 Higher National Diploma in Animal Management: mapping of transferable employability and academic study skills

Skill Sets	Cognitive skills							Intra-personal Skills				Interpersonal Skills		
Unit	Problem-solving	Critical Thinking/A analysis	Decision-making	Effective Communication	Digital Literacy	Numeracy	Creativity	Plan Prioritise	Self-management	Independent learning	Self-reflection	Team work	Leadership	Cultural Awareness
23	X	X		X	X	X		X	X	X	X			
24	X	X	X	X	X	X	X	X	X	X	X	X	X	
25	X		X	X	X			X	X	X	X			X
26	X	X		X	X			X	X	X	X			X
27	X	X		X	X	X		X	X	X	X			X
28	X	X		X	X	X		X	X	X	X			X
29	X		X	X			X	X	X	X	X	X	X	X
30	X	X	X	X	X	X		X	X	X	X			X
31	X			X	X			X	X	X	X	X		X
32	X	X	X	X			X	X	X	X	X	X	X	X
33	X	X		X	X	X		X	X	X	X			X
34	X	X	X	X		X		X	X	X	X	X	X	X
35	X		X	X			X	X	X	X	X			X
36			X	X	X		X	X	X	X	X			X
37	X	X	X	X			X	X	X	X	X		X	X

Skill Sets	Cognitive skills							Intra-personal Skills				Interpersonal Skills		
Unit	Problem-solving	Critical Thinking/A nalysis	Decision-making	Effective Communication	Digital Literacy	Numeracy	Creativity	Plan Prioritise	Self-management	Independent learning	Self-reflection	Team work	Leadership	Cultural Awareness
38	X	X	X	X		X	X	X	X	X	X	X	X	X
39		X	X	X	X	X		X	X	X	X			X
40	X		X	X	X		X	X	X	X	X			X
41	X		X	X				X	X	X	X	X	X	X
42	X	X	X						X	X	X	X	X	
43	X	X	X	X						X	X	X	X	
44	X	X	X	X						X	X	X	X	
45	X		X	X			X	X	X	X	X	X	X	X
46	X	X	X	X		X		X	X	X	X	X	X	X
47	X	X	X	X		X	X	X	X	X	X	X		X
48	X		X	X			X	X	X	X	X			X
49	X	X	X	X			X	X	X	X		X		
50	X	X			X	X				X	X	X		X
51	X	X	X	X			X	X	X	X				X
52	X	X	X	X			X	X	X	X	X	X	X	
53	X			X	X				X	X	X			X

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