

Unit 31: Understand the Principles of Zoological Animal Health and Husbandry

Unit code	Y/600/9428
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

This unit aims to provide learners with an understanding of the principles of zoo animal health and husbandry and how these can be put into practice. This unit is primarily aimed at learners within a centre-based setting looking to progress into the sector or to further education and training.

● Unit introduction

Many people are fascinated by zoo animals and zoos form a very popular part of UK and overseas tourism and pleasure activities. Zoos also play a critical part in educating the public about creatures that they would not normally come into contact with. They are also involved in, breeding endangered species, research and conservation.

To enable zoos to provide these factors, staff have to be fully trained in looking after the health and husbandry of a wide variety of species. This unit provides an introduction to the housing and accommodation needs, restraint and handling techniques, health and welfare requirements, and nutrition and feeding of zoo animals.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the housing and accommodation requirements of zoo animals
- 2 Know the techniques and equipment required for competent restraint of zoo animals
- 3 Understand the importance of health and welfare of zoo animals
- 4 Understand the essential features of nutrition and feeding of zoo animals.

Unit content

1 Understand the housing and accommodation requirements of zoo animals

Housing and accommodation: types of accommodation eg indoor, outdoor, display area, safety and security; requirements under Zoo Licensing Act; substrate and properties of various types; provision of heat; protection from weather and environment; materials and cost of new accommodation; planning accommodation; proximity to other animals; space allowance; proximity to utilities eg water, electricity; access to and from the accommodation

2 Know the techniques and equipment required for competent restraint of zoo animals

Techniques: safe capture and restraint of zoo animals; reasons for restraint eg medical, movement, isolation, pregnancy and birth complications, sexing, health checking and monitoring; approach of zoo animals; health and safety, use of firearms; use of drugs eg sedation; use of personnel; role of keepers during restraint; records used to record restraining activities and importance of these

Equipment: physical restraint eg crush cage; crate; catch pole; hook; trap containers; gates and hurdles; vehicles; chemical restraint eg sedation or anaesthesia; monitoring animals during restraint; stress

3 Understand the importance of health and welfare of zoo animals

Health of zoo animals: common diseases; parasite management; vaccination programmes; signs of good and ill health in species; disease management; isolation and quarantine procedures; healthcare records

Welfare: mental health of animals; enrichment opportunities; socialisation of animals; five animal freedoms and provision of these; predator/prey relationships and proximities; signs of normal and abnormal behaviour and monitoring

4 Understand the essential features of nutrition and feeding of zoo animals

Nutrition and feeding: provision of a balanced diet; supplementation and its necessity in zoos; feeding close to a wild diet; access to food and water; feeding behaviour; preparation of food; hygiene and cross-contamination; availability of food and alternative resources; equipment needed to feed zoo animals; presentation of food; using food as an enrichment tool; types and locating zoo animal feeds; feeding plans; feeding records

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 discuss appropriate features of enclosure design for zoo animals [IE, CT]	M1 design a suitable enclosure for given zoo animals	D1 evaluate accommodation design in a range of animal establishments making justified suggestions for improvement
P2 assess the suitability of barriers to enclosures for different zoo animals		
P3 evaluate the effectiveness of the environment in zoo animal enclosures		
P4 explain how features of the natural environment and enrichment can be incorporated into enclosures for zoo animals		
P5 describe the range of equipment which is appropriate for the restraint of different zoo animals	M2 evaluate the health and welfare implications and effects of physical and chemical restraint on given zoo animals	
P6 evaluate the effectiveness of restraint techniques for different zoo animals		
P7 explain how and why records of restraint activities are recorded [IE, CT]		

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<p>P8 describe signs of good and poor health in different zoo animals [IE, CT]</p>	<p>M3 devise an annual health care regime for given zoo animals</p>	<p>D2 evaluate zoo animal management techniques for a range of zoo animals in existing collections.</p>
<p>P9 discuss the causes of disease in zoo animals [IE, CT]</p>		
<p>P10 assess preventative and control strategies for diseases for zoo animals [IE, TW]</p>		
<p>P11 discuss activities which enhance the welfare of animals in zoos</p>		
<p>P12 explain what factors affect the nutritional requirements of different zoo animals [IE, CT]</p>	<p>M4 devise a feeding plan for a range of zoo animals.</p>	
<p>P13 discuss how a balanced diet is produced for different zoo animals [IE, CT, RL]</p>		
<p>P14 discuss the role and inclusion of dietary supplements in feeding regimes for zoo animals [IE, CT, RL]</p>		
<p>P15 explain how enrichment can be provided through nutrition and feeding. [IE, CT, RL]</p>		

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

Delivery of this unit will involve practical and written assessments, visits to suitable collections and will link to industrial experience placements.

To successfully complete this unit, learners should be given opportunities to plan, maintain and monitor zoo animal accommodation. The emphasis should be on practical assessments based on zoo visits where possible for the unit, with learners given adequate time to prepare for these assessments.

Access to the animals should be given to people of all abilities with the emphasis being put on health and safety at all times, especially when working with zoo animals.

Centres should be encouraged to give learners appropriate access to a variety of animals, but animal welfare is of paramount importance, and this is likely to involve careful planning to prevent stress or suffering to the animals.

Learners should be encouraged to carry out independent research for this unit, to allow for guided development of research and independent thinking skills.

Tutors should also be encouraged to formulate links with external animal care organisations to provide a 'real' view of zoo animal husbandry and management. This could be done via both visits to animal establishments and guest lectures from organisational professionals such as representatives from animal housing companies, animal experts, zoo keepers, vets and vet nurses.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction to the unit.
Zoo visits.
Zoo animal accommodation: theory session based on visits to animal establishments. Assignment 1: Zoo Animal Accommodation (P1, P2, P3, P4)
Introduction and research. Assignment 2: Accommodation Design (M1, D1)
Introduction and research. Theory: zoo animal restraint – high-quality AV materials could be used to show how this is done. Learners research the subject with guidance from tutor.
Assignment 3: Restraint of Zoo Animals (P5, P6, P7, M2)
Introduction and ideas session.

Topic and suggested assignments/activities and/assessment

Theory practical: healthcare and welfare of zoo animals – signs of good and bad health, health care regimes, worming and parasite control, welfare opportunities – high-quality AV material could be used of 'bad welfare' zoos to promote health and welfare in UK zoos.

Assignment 4: Zoo Animal Health and Welfare (P8, P9, P10, P11, M3) Introduction and ideas session.

Zoo animal nutrition and feeding: theory session – provision of a balanced diet, importance of and types of supplements, providing a diet close to a wild one.

Assignment 5: Feeding and Nutrition of Zoo Animals (P12, P13, P14, P15, M4)

Research into animal management techniques.

Assignment 6: Zoo Animal Management Techniques (D2) – Introduction and ideas session.

Unit evaluation.

Assessment

For P1, P2, P3 and P4, learners are required to discuss the appropriate features of enclosure design for zoo animals, assess the suitability of barriers, evaluate the effectiveness of the environment and explain how enrichment and natural features can be provided for zoo animals. Learners must cover a minimum of three animal species in this context. This could be assessed practically, with learners being asked to work in small groups when on two zoo visits, and complete a question sheet (devised by the centre). Photographic evidence would also form a valid point of reference for this outcome.

This could then be extended for M1, where learners are required to design a suitable enclosure for given zoo animals. Learners must design a minimum of two enclosures, for two different zoo animal species chosen by the centre, this could be presented as a poster presentation.

For D1, learners are required to evaluate a minimum of three accommodation designs in existing animal establishments, and make suggestions for improvement. This could be done as another poster with pictures of existing accommodation and relevant explanations and evaluations. An essay on suggestions for improvement could accompany this.

For P5, P6 and P7, learners are required to describe the equipment, effectiveness used for restraining zoo animals, its effectiveness and how it is recorded. This could be presented as a report. For M2, learners should include the health and welfare implications of both physical and chemical restraint on the same animals chosen for P5, P6, and P7.

For P8, P9, P10 and P11, learners are required to describe signs of good and poor health in zoo animals, discuss the causes of disease, assess preventative and control strategies and discuss welfare activities that enhance the welfare of animals in zoos. For this, learners could compile a presentation in small groups that discusses all these factors for three different zoo animals. This could also lead on to M3, where learners could include a written annual healthcare regime for their three animals to accompany their presentation.

For P12, P13, P14 and P15, learners are required to discuss nutrition and feeding of zoo animals, and how to provide enrichment through feeding. This could be presented as a written essay covering how to provide a balanced diet, supplementing the diet, factors affecting nutritional requirements and enrichment for three different zoo animals. Learners could then also provide a written feeding plan for three zoo animals that includes all of these factors for M4.

Finally, for D2, learners should summarise the unit by evaluating zoo animal management techniques for a range of animals kept in zoos that they have visited. This could be done as a written essay.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3, P4	Zoo Animal Accommodation	Work in small groups when on two zoo visits, assess the suitability of the zoo's enclosures using a question sheet.	Question paper, observations, photos.
M1, D1	Accommodation Design	Design suitable enclosures for two given zoo animals. Evaluate the design accommodation that already exists in zoos, and make suggestions for improvement.	Posters. Presentation. Accompanying essay.
P5, P6, P7, M2	Restraint of Zoo Animals	Describe the equipment, effectiveness and records used for restraining two zoo animals.	Leaflet.
P8, P9, P10, P11, M3	Zoo Animal Health and Welfare	Present information on the signs of good/poor health, causes of disease, preventative control measures and welfare activities for two zoo animals. Include a written annual healthcare regime for these two zoo animals.	Presentation, healthcare regime.
P12, P13, P14, P15, M4	Feeding and Nutrition of Zoo Animals	Write an essay on how to provide a balanced diet, supplementing the diet, factors affecting nutritional requirements and enrichment for two zoo animals. Provide a written feeding plan for three zoo animals that includes all of these factors.	Written essay.
D2	Zoo Animal Management Techniques	Produce a written evaluation of zoo animal management techniques seen in zoos visited.	Written essay.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC land-based sector suite. This unit has particular links with:

Level 2	Level 3
Contribute to the Care of Exotic Animals	Element CU39.1 Plan the accommodation of animals Element CU39.2 Monitor and evaluate the accommodation of animals
Introduction to the Principles and Practices of Animal Behaviour and Handling	Understand and Promote Animal Health
Understand the Principles and Practices of Animal Establishments	Undertake Animal Handling and Safe Working
	Manage Animal Accommodation
	Plan and Monitor Animal Feeding

Essential resources

It is of paramount importance that learners have access to a variety of zoos, wildlife parks or collections containing zoo animals for this unit to enable them to gather data to use in their assessments. It is also important that learners have access to up-to-date ICT facilities to enable them to carry out research.

Employer engagement and vocational contexts

Learners can be introduced to a variety of professionals from different companies and organisations such as vets, RSPCA officers, animal care representatives, breeders et. to broaden their depth of knowledge and make the learning experience interesting and contextualised. This could be done by either guest lectures or off site visits to different establishments. All sites should be checked for health and safety before any visits.

Indicative reading for learners

Textbooks

Kleiman D, Allen M, Thompson K and Lumpkin S (editors) – *Wild Mammals in Captivity: Principles and Techniques* (University of Chicago Press, 1996) ISBN 9780226440033

Shepherdson D, Mellen J and Hutchins M – *Second Nature: Environmental Enrichment for Captive Animals* (Smithsonian Books US, 1999) ISBN 9781560983972

Spedding C – *Animal Welfare* (Earthscan Publications, 2000) ISBN 9781853836725

Young R – *Environmental Enrichment for Captive Animals* (Wiley-Blackwell, 2003) ISBN 9780632064076

Journals

IZN – International Zoo News (North of England Zoological Society)

Ratel – published by the Association of British Wild Animal Keepers (ABWAK)

DVDs

Sad Eyes and Empty Lives – Captive Animals Protection Society (CAPS)

The Bear Necessities – Universities Federation for Animal Welfare (UFAW)

Websites

Association of British and Irish Wild Animal Keepers	www.abwak.co.uk
Born Free Zoo Check	www.bornfree.org.uk/zoocheck/zcukzoo01.htm
Brookfield Zoo	www.brookfieldzoo.org/pagegen/inc/WCZS.pdf
Captive Animal's Protection Society (CAPS)	www.captiveanimals.org
Chester Zoo	www.chesterzoo.co.uk
Department for Environment, Food and Rural Affairs	www.defra.gov.uk
European Association of Zoos and Aquaria (EAZA)	www.eaza.net
London Zoo	www.zsl.org/london-zoo
The International Centre for Birds of Prey	www.icbp.org

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Independent enquirers	exploring relevant issues and researching zoo enclosures
Creative thinkers	questioning own and others' assumptions in the exploration of animal restraint techniques
Team workers	working with others when assessing disease preventative and control strategies.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	evaluating zoo animal management techniques
Creative thinkers	generating ideas and exploring animal health care techniques
Reflective learners	communicating animal enclosure learning in relevant ways
Team workers	adapting behaviour to suit different zoo animal roles and situations
Effective participators	discussing animal disease issues of concern.