

ECOLOGY AND ENVIRONMENTAL SCIENCE

UNIT CODE: 0521 441 24A

TVET CDACC UNIT CODE: HE/CU/AHP/CC/09/5/MA

Relationship to Occupational Standards

This unit addresses the unit of competency: Apply knowledge of ecology and environmental science.

Unit Duration: 50 hours

Unit Description

This unit specifies the competencies required by an animal health and production to apply knowledge of ecology. It involves applying knowledge of community in ecology, ecosystem in animal health, energy flow in an ecosystem, nutrient cycling in an ecosystem, plant ecology in an ecosystem, principles of ecosystem in the environment, knowledge of environmental health and management and knowledge of sustainable environmental management.

Summary of Learning Outcomes

By the end of this unit, the learner should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Apply knowledge of community in ecology	5
2.	Apply knowledge of ecosystem in animal health	5
3.	Apply knowledge of energy flow in an ecosystem	5
4.	Apply knowledge of nutrient cycling in an ecosystem	5
5.	Apply knowledge of plant ecology in an ecosystem	10
6.	Apply principles of ecosystem in the environment	5
7.	Apply knowledge of environmental health and management	10
8.	Apply knowledge of sustainable environmental management	5
Total		50

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Methods of assessment
1. Apply knowledge of community in ecology	1.1 Introduction to ecology 1.2 Association between organism 1.2.1 Parasitism 1.2.2 Mutualism 1.2.3 Symbiosis 1.2.4 Commensalism 1.3 Adaptation of dryland plants 1.4 Animal adaptation to dryland conditions	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions
2. Apply knowledge of ecosystem in animal health	2.1 Ecosystem in animal health 2.2 Biotic system 2.3 Abiotic system	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions
3. Apply knowledge of energy flow in an ecosystem	3.1 Energy flow terminologies 3.1.1 Ecosystem 3.1.2 stocking rate 3.1.3 Ecology 3.1.4 Biodiversity 3.1.5 Habitat 3.1.6 Biome 3.2 Ecological pyramids in ecosystem 3.3 Energy flow in an ecosystem 3.4 Ecological efficiencies of transfer of energy in an ecosystem 3.6 Biological production in	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions

	energy flow	
4. Apply knowledge of nutrient cycling in an ecosystem	<p>4.1 Nutrient cycling in an ecosystem</p> <p>4.2 Watercycle in ecosystem</p> <p>4.3 Nitrogen cycle in ecosystem</p> <p>4.4 Carbon and Phosphorus cycle in ecosystem</p>	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions
5. Apply knowledge of plant ecology in an ecosystem	<p>5.1 Plant ecology in an ecosystem</p> <p>5.2 Forms of plant growth</p> <p>5.3 Classification of plant communities</p> <p>5.3.1 Monocotyledons</p> <p>5.3.2 Dicotyledons</p> <p>5.3.3 Bryophytes</p> <p>5.3.4 Pteridophytes</p> <p>5.4 Stages of retrogression in plants</p> <p>5.5 Ecoclimatic and agro-ecological zones</p>	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions
6. Apply principles ecosystem in the environment	<p>6.1 Destructive activities of animals in an ecosystem</p> <p>6.2 Beneficial activities of animals in an ecosystem</p> <p>6.3 Effects of man activities in an ecosystem</p>	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions
7. Apply knowledge of environmental health and management	<p>7.1 Environmental health and management</p> <p>7.2 Terminologies in environmental health and management</p>	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence

	<p>7.2.1 Contamination</p> <p>7.2.2 Conservation</p> <p>7.2.3 Environmental degradation</p> <p>7.2.4 Pollution</p> <p>7.3 Management of environmental pollution</p> <p>7.4 Biodegradable and non-biodegradable items used in the farm</p>	<ul style="list-style-type: none"> ● Oral questions
8. Apply knowledge of sustainable environmental management	<p>8.1 Sustainable environmental management</p> <p>8.2 Causes of climate change</p> <p>8.3 Effects of climate change</p> <p>8.4 Mitigation of climate change</p>	<ul style="list-style-type: none"> ● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions

Suggested Methods of Delivery

- Practical
- Projects
- Demonstrations
- Group discussion
- Direct instructions

Recommended Resources for 25 trainees

S/No.	Category/Item	Description/S pecificati on s	Quantity	Recommende d Ratio (Item: Trainee)
A	Learning materials			
	Projector	EPSOM	1	1:25
	Whiteboard/Smartboard	2.5 By 1.5.M	1	1:25
	Desktop/computer		1	1:25
B	Learning Facilities & Infrastructure			
	Lecture/Theory room	With at least 25 seats	1	1:25

	Library	Equipped with ecology and environmental science books and E- section	1	1:25
C	Consumable Materials			
D	Tools and Equipment			