

ECOLOGY AND ENVIRONMENTAL SCIENCE

ISCED UNIT CODE: 0521 541 26A

TVET CDACC UNIT CODE: HE/CU/AHP/CC/05/6/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 technologist to apply knowledge of ecology and environmental science. 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	10
2.	Apply knowledge of ecosystem in animal health	5
3.	Apply knowledge of energy flow in an ecosystem	10
4.	Apply knowledge of nutrient cycling in an ecosystem	5
5.	Apply knowledge of plant ecology in an ecosystem	5
6.	Apply principles ecosystem in the environment	5
7.	Apply knowledge of environmental health and management	5
8.	Apply knowledge of sustainable environmental	5

	management	
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 community in ecology 1.2. Association between organism 1.2.1. Parasitism 1.2.2. Mutualism 1.2.3. Symbiosis 1.2.4. Commensalism 1.3. Dry land plants adaptation 1.4. Animal adaptation to dry land	<ul style="list-style-type: none"> • Practical • Project • Portfolio of evidence • Third party report • Written assessment • Oral questioning
2. Apply knowledge of ecosystem in animal health	2.1. Ecosystem in animal health 2.2. Ecosystem 2.2.1. Biotic 2.2.2. Abiotic	<ul style="list-style-type: none"> • Practical • Project • Portfolio of evidence • Third party report • Written assessment • Oral questioning
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	<ul style="list-style-type: none"> • Practical • Project • Portfolio of evidence • Third party report • Written assessment • Oral questioning

	<p>3.3. Energy flow in an ecosystem</p> <p>3.4. Ecological efficiencies</p> <p>3.5. Biological production in energy flow</p>	
4. Apply knowledge of nutrient cycling in an ecosystem	<p>4.1. Nutrient cycling in an ecosystem</p> <p>4.2. Water cycle 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 • Portfolio of evidence • Third party report • Written assessment • Oral questioning
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. Plant communities</p> <p style="padding-left: 40px;">5.3.1. Monocotyledons</p> <p style="padding-left: 40px;">Dicotyledons</p> <p style="padding-left: 40px;">5.3.2. Bryophytes</p> <p style="padding-left: 40px;">5.3.3. Pteridophytes</p> <p>5.4. Stages of retrogression</p> <p>5.5. Eco climatic and agro-ecological zones</p>	<ul style="list-style-type: none"> • Written test • Observation • Third party report • Oral questioning
6. Apply principles ecosystem in the environment	<p>6.1. Principles of ecosystem in the environment</p> <p>6.2. Destructive activities of animals in an ecosystem</p> <p>6.3. Beneficial activities of animals in an ecosystem</p> <p>6.4. Effects of man activities in an ecosystem</p>	<ul style="list-style-type: none"> • Practical • Project • Portfolio of evidence • Third party report • Written assessment • Oral questioning

<p>7. Apply knowledge of environmental health and management</p>	<p>7.1. Terminologies in environmental health and management</p> <p>7.1.1. Contamination</p> <p>7.1.2. Conservation</p> <p>7.1.3. Environmental degradation</p> <p>7.1.4. Pollution</p> <p>7.1.5. Environmental pollution</p> <p>7.1.6. Biodegradable and non-biodegradable</p>	<ul style="list-style-type: none"> • Practical • Project • Portfolio of evidence • Third party report • Written assessment • Oral questioning
<p>8. Apply knowledge of sustainable environmental management</p>	<p>8.1. Introduction to 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> <p>8.4.1. Afforestation</p> <p>8.4.2. Clean Energy</p> <p>8.4.2.1. Biogas</p> <p>8.4.2.2. Solar</p> <p>8.4.2.3. Wind power</p> <p>8.5. Agencies for climate change</p> <p>8.5.1. Government agencies</p> <p>8.5.2. Non – government organizations</p> <p>8.5.3. Associations.</p>	<ul style="list-style-type: none"> • Practical • Project • Portfolio of evidence • Third party report • Written assessment • Oral questioning

Suggested Methods of delivery

- Practical
- Projects

- Demonstrations
- Group discussion
- Direct instructions

Recommended Resources for 25 trainees

S/No.	Category/Item	Description/ Specification	Quantity	Recommended Ratio (Item: Trainee)
	Learning materials			
1.	Projector		1	1:25
2.	Whiteboard/Smart board		1	1:25
3.	Desktop/computer		1	1:25
4.	Lecture/Theory room		1	1:25
5.	Animal farm	As guided by KVB	1	1:25
6.	Library		1	1:25
7.	E-Library		1	1:25