

GENAB502

APPLIED BIOLOGY

APPLY BASIC KNOWLEDGE OF ECOLOGY

Competence

RQF Level: 5

Learning Hours



Credits: 3

Sector: Agriculture and Food Processing, Hospitality and Tourism

Trade: Agriculture, Food Processing, Animal Health, Forestry, Wood Technology, Water and Irrigation, Leather Technology, Food and beverage operations, Tourism.

Module Type: General

Curriculum: TVET Certificate 5 in Agriculture, Food Processing, Animal Health, Forestry, Wood Technology, Water and Irrigation, Leather Technology, Food and beverage operations, Tourism.

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Purpose statement	This module describes the knowledge, skills and attitudes required to demonstrate basic knowledge of Ecology. At the end of this module, the learner will be able to discuss theories of evolution and their evidence, describe ecosystems and illustrate mechanisms of environmental conservation.					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	50%
	Practical work:		70%		70%	
	Group project and presentation	20%				
	Individual project /Work	50%				
			Summative Assessment		50%	

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria	
1. Discuss theories of evolution and their evidence	1.1.	Origin of life is clearly explained based on theories of evolution
	1.2.	Human evolution is properly explained in reference to its evidence
	1.3.	Present – day evolution is effectively illustrated referring to its factors and mechanisms
2. Describe ecosystems	2.1.	Ecological factors are properly identified referring to their effects on living organisms
	2.2.	Types of ecosystems are clearly distinguished based on relationships among living organisms
	2.3.	Relationship between living organisms is effectively discussed in reference with their biological community
3. Illustrate mechanisms of environmental conservation	3.1.	Biogeochemical cycles are appropriately described based on their nature
	3.2.	Ecosystem degradation is clearly explained referring to natural equilibrium
	3.3.	Environmental protection strategies are effectively discussed in accordance with its conservation principles

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Discuss theories of evolution and their evidence 2. Describe ecosystems 3. Illustrate mechanisms of environmental conservation
Learning outcome 1: Discuss theories of evolution and their evidence	Learning hours: 10
Indicative content	
• Explanation of origin of life ✓ Theories of evolution ✚ Lamarckism ✚ Darwinism ✚ Neo-Darwinism ✓ Evidence for evolution ✚ Palaeontology: the study of fossil ✚ Comparative biochemistry and cell biology ✚ Comparative embryology ✚ Comparative anatomy ✚ DNA evidence • Explanation of Human evolution ✓ History of human evolution ✓ Stages in human evolution and their characteristics • Illustration of Present – day evolution ✓ Present-day evolution concept definition ✓ Factors influencing present day evolution ✓ Mechanisms of present-day evolution ✓ Relevance of present-day evolution ✚ For human beings ✚ In conservation	
Resources required for the learning outcome	
Equipment	Computer, projector, white board/chalkboard
Materials	Flipcharts, papers, wall charts, pictures
Tools	Markers, chalks, tutorial videos

Facilitation techniques	Brainstorming, demonstration and simulation, individual and group work, group discussion, documentary research
Formative assessment methods	Written assessment, oral presentation

Learning outcome 2: Describe ecosystems		Learning hours: 10
Indicative content		
• Explanation of ecological factors ✓ Introduction to ecology ✓ Ecological factors + Biotic factors + Abiotic factors • Description of ecosystems ✓ Definition of ecosystem ✓ Types of ecosystems ✓ Trophic levels of organisms within ecosystem ✓ Productivity in ecosystem + Concepts of productivity + Types of productivity + Factors affecting the productivity of an ecosystem • Explanation of relationship between living organisms ✓ Relationships among living organisms in biological communities ✓ Energy flow in ecosystem ✓ Human impact on the ecosystem		
Resources required for the indicative content		
Equipment	Computer, projector, white board/ chalkboard	
Materials	Flipcharts, papers, wall charts	
Tools	Markers, chalks, tutorial videos, pictures	
Facilitation techniques	Brainstorming, demonstration and simulation, individual and group work, group discussion	
Formative assessment methods	Written assessment, oral presentation	

Learning outcome 3: Illustrate mechanisms of environmental conservation		Learning hours: 10
Indicative content		
• Description of biogeochemical cycles ✓ Water cycle ✓ Carbon cycle ✓ Nitrogen cycle ✓ Phosphorous cycle • Explanation of ecosystem degradation ✓ Natural equilibrium concept definition ✓ Forms of ecosystems degradation ✓ Environmental pollution • Discussion on environmental protection strategies ✓ Environmental conservation concept definition ✓ Environmental conservation principles ✓ Environmental protection approaches ✓ Environmental pollution control		
Resources required for the indicative content		
Equipment	Computer, projector, white board/ chalkboard	
Materials	Flipcharts, papers, wall charts	
Tools	Markers, chalks, tutorial videos, pictures	
Facilitation techniques	Brainstorming, demonstration and simulation, individual and group work, group discussion	
Formative assessment methods	Written assessment, oral presentation	

References:

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