



Republic of Rwanda
Ministry of Education



RTB | RWANDA
TVET BOARD

APPLIED BIOLOGY

GENAB302

Demonstrate Basic Knowledge of General Biology

Competence

RQF Level: 3

Learning Hours

Credits: 4



Sector: Agriculture and Food Processing, Hospitality and Tourism, Arts and Craft.

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

Module Type: General

Curriculum: TVET Certificate 3 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 Biology. At the end of this module, the learner will be able to describe cell and tissue structure and distinguish the various structural and functional features of animal and plant diversity.				
Delivery modality	Training delivery	100%	Assessment	Total 100%	
	Theoretical content	30%	Formative assessment	30%	
	Practical work:	70%		70%	50%
	<ul style="list-style-type: none"> Group project and presentation 20% Individual project /Work 50% 				
				Summative Assessment	

Elements of Competency and Performance Criteria




Elements of competency	Performance criteria
1. Describe cell and tissue structure and function	1.1. Prokaryotic and eukaryotic cells are clearly characterised based on their structures and functions
	1.2. Animal cells are effectively distinguished from plant cells based on their structures and functions
	1.3. Plant tissues are correctly differentiated from animal tissues in accordance with their structures and functions
2. Distinguish the various structural features of animal diversity	2.1. Animal kingdom is properly characterised based on phylogenic classification
	2.2. Animals are correctly classified as per phylogenic system
	2.3. Vertebrates are clearly distinguished from invertebrates according to their classes.
3. Differentiate the various structural and functional features of plant diversity	3.1. Plant kingdom is properly characterised basing on their morphology
	3.2. Plant kingdom is correctly described basing on their physiology
	3.3. Plant categories are clearly distinguished based on their taxonomy

Course content

Learning outcomes	<p>At the end of this module the learner will be able to:</p> <ol style="list-style-type: none"> 1. Describe cell and tissue structure and function 2. Distinguish the various structural features of animal diversity 3. Differentiate the various structural and functional features of plant diversity
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Learning outcome 1: Describe cell and tissue structure and function	Learning hours: 10
Indicative content	
<ul style="list-style-type: none"> • Characterization of prokaryotic and eukaryotic cells <ul style="list-style-type: none"> ✓ Introduction to cell <ul style="list-style-type: none"> ✚ History of cell ✚ Cell theory ✚ Protocol for cell observation ✓ Prokaryotic and eukaryotic cell <ul style="list-style-type: none"> ✚ Definition ✚ Features • Distinction of plant cells from animal cells <ul style="list-style-type: none"> ✓ Structure ✓ Functions of cell organelles • Description of animal and plant tissues <ul style="list-style-type: none"> ✓ Introduction to levels of body organization ✓ Animal and plant tissues <ul style="list-style-type: none"> ✚ Types and functions 	
Resources required for the learning outcome	
Equipment	Microscopy, Computer, Projector, Black/White board
Materials	Plant root and leaves, Flipcharts, Wallcharts, Reference books







Tools	Slides, Slide covers, Knives, Chalks, Papers, Tutorial videos, Pens, Markers, Internet
Facilitation techniques	Brainstorming, Group discussions, Documentary research, Question and answer, Demonstration and simulation, Individual and group work, Practical exercise.
Formative assessment methods	Written assessment, Oral presentation, Performance based assessment

Learning outcome 2: Distinguish the various structural features of animal diversity		Learning hours: 15
Indicative content		
<ul style="list-style-type: none"> • Characterization of animal kingdom <ul style="list-style-type: none"> ✓ Morphology ✓ Mode of reproduction • Phylogenic classification of animals <ul style="list-style-type: none"> ✓ Animal Taxonomy <ul style="list-style-type: none">  Types of classification  Main taxonomic ranks  Binomial nomenclature • Distinction of Vertebrates from invertebrates <ul style="list-style-type: none"> ✓ Morphological and physiological characteristics ✓ Groups of vertebrates and their characteristics ✓ Groups of invertebrates and their characteristics 		
Resources required for the learning outcome		
Equipment	Computer, Projector, Black/White board	
Materials	Animal skeletons, Flipcharts, Wallcharts, Reference books	
Tools	Chalks, Papers, Tutorial videos, Pens, Markers, Internet	
Facilitation techniques	Brainstorming, Group Discussions, Documentary research, Question and answer, Demonstration and simulation, Individual and group work, Practical exercise	

Formative assessment methods	Written assessment, Oral presentation
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Learning outcome 3: Differentiate the various structural and functional features of plant diversity	Learning hours: 15
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Indicative content

- **Morphological characterization of plant kingdom**
 - ✓ Introduction to plant kingdom
 - ✓ Main parts of a plant and their functions
- **Physiological characterization of plant kingdom**
 - ✓ Main plant physiological functions
 -  Nutrition
 -  Reproduction
 -  Transpiration
 -  Plant growth
 - ✓ Plant adaptation
- **Plant taxonomy**
 - ✓ Classification criteria of plant kingdom
 - ✓ Phylogenic subgroups of plant kingdom
 -  Cryptogams
 -  Phanerogams
 - ✓ Plant classification based on life cycle and botanical characteristics

Resources required for the indicative content

Equipment	Computer, Projector, Black/White board
Materials	Plant pictures and samples, Flipcharts, Wallcharts, Reference books
Tools	Chalks, Papers, Tutorial videos, Pens, Markers, Internet
Facilitation techniques	Brainstorming, Group discussions, Documentary research, Question and answer, Demonstration and simulation, Individual and group work, Practical exercise
Formative assessment methods	Written assessment, Oral presentation

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