

BIOCHEMISTRY

ISCED UNIT CODE: 0512 541 07A

TVET CDACC UNIT CODE: HE/CU/AHP/CC/03/5/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply knowledge of biochemistry.

UNIT DURATION: 90 Hours

Unit Description

This unit specifies the competencies required by an animal health and production technologist to apply knowledge of biochemistry. It involves applying the knowledge of macromolecules, enzymes in managing animal health, molecular genetics, biomolecule metabolism in animal health and knowledge of biochemistry in ruminant nutrition.

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 micro-molecules in animal health	15
2.	Apply knowledge of enzymes in managing animal health	15
3.	Apply knowledge of molecular genetics	20
4.	Apply knowledge of biomolecule metabolism in animal health	20
5.	Apply knowledge of biochemistry in ruminant nutrition	20
Total		90

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Apply knowledge of macromolecules in animal health	1.1. Introduction to biochemistry 1.2. Definition of macromolecules 1.3. Types of macromolecules 1.3.1. Carbohydrates 1.3.2. Proteins 1.3.3. Vitamins 1.3.4. Minerals 1.3.5. Lipids	<ul style="list-style-type: none"> • Written tests • Practical • Third party report • Oral questions • Projects
2. Apply knowledge of enzymes in managing animal health	2.1. Basic concepts of enzymes 2.1.1. Isoenzymes 2.1.2. Holoenzymes 2.1.3. Coenzymes 2.1.4. Apoenzyme 2.2. Types and functions of enzymes 2.3. Management of catalytic reactions 2.4. Properties of enzymes 2.5. Enzyme substrate reactions 2.6. Enzyme metabolism	<ul style="list-style-type: none"> • Written tests • Practical • Project • Portfolio of evidence • Third party report • Oral questioning
3. Apply knowledge of molecular genetics	3.1. Principles of molecular genetics 3.2. Structural elements of chromosomes nucleic acids 3.3. Classification of Nucleic acids 3.3.1. Heterocyclic bases present in nucleic acid 3.3.2. Pentose sugars in nucleic acid 3.4. Metabolism of nucleic acids 3.5. The process of DNA replication 3.6. The process of DNA transcription 3.6.1. Protein synthesis process 3.6.2. Point mutation	<ul style="list-style-type: none"> • Written tests • Practical • Project • Portfolio of evidence • Third party report • Oral questioning

<p>4. Apply knowledge of biomolecule metabolism in animal health</p>	<p>4.1. Biomolecule metabolism 4.2. Types of biomolecules 4.2.1. Carbohydrates 4.2.2. Proteins 4.2.3. Vitamins 4.2.4. Minerals 4.2.5. Lipids 4.3. Metabolic pathways 4.4. Glycolytic pathway 4.5. Krebs cycle 4.6. Management of effects of biomolecule metabolism.</p>	<ul style="list-style-type: none"> • Written tests • Practical • Project • Portfolio of evidence • Third party report • Oral questioning
<p>5. Apply knowledge of biochemistry in ruminant nutrition</p>	<p>5.1. Functions of the rumen 5.2. Feed storage 5.3. Fermentation 5.4. Environment for growth of microbes 5.5. Physiology of digestion in the rumen 5.5.1. Volatile fatty acids 5.5.2. Acetic acid 5.5.3. Propionic acid 5.5.4. Butyric acid</p>	<ul style="list-style-type: none"> • Written tests • Practical • Project • Portfolio of evidence • Third party report • Oral questioning

Suggested Methods of delivery

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

Training 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		25	1:1
4.	Lecture/Theory room		1	1:25
5.	Biochemistry Laboratory	As per KVB requirement	1	1:25
6.	Library		1	1:25
7.	E-Library		1	1:25