MICROBIOLOGY

ISCED UNIT CODE: 0511 541 08A

TVET CDACC UNIT CODE: HE/CU/AHP/CC/09/6/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply Knowledge of microbiology

UNIT DURATION: 60 Hours

Unit Description

This unit specifies the competencies required by an animal health and production technologist to apply microbiological principles in diagnosing animal diseases. It involves performing basic laboratory techniques, applying knowledge of physiology and nutrition of microorganisms, applying knowledge of microbial genetics and identifying microbes of veterinary importance.

Summary of Learning Outcomes

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

S/No	Learning Outcomes	Duration (Hours)
1.	Perform basic laboratory techniques	**20**
2.	Apply knowledge of physiology and nutrition of microorganisms	**10**
3.	Apply knowledge of microbial genetics	**10**
4.	Identify microbes of veterinary importance	**20**
Total		**60**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Perform basic	1.1. Definition of key terms 1.1.1. Microbiology	• Written tests

laboratory techniques	1.1.2. Normal flora 1.1.3. Infection 1.1.4. Pathogen 1.1.5. Pathogenesis 1.1.6. Pathogenicity 1.1.7. Virulence 1.1.8. Lesion 1.1.9. Disease 1.2. Study of specific microorganisms 1.2.1. Prokaryotic 1.2.2. Eukaryotic 1.3. History of microbiology 1.4. Microscopy and microscopy techniques 1.4.1. Laboratory equipment 1.4.2. Microscope 1.4.3. Slides 1.4.4. Bunsen burner 1.4.5. Centrifuge 1.4.6. Spatula 1.4.7. Cover slip 1.4.8. Beakers 1.4.9. Petri dishes 1.4.10. Inoculating wires 1.4.11. Test tubes 1.5. Staining techniques 1.5.1. Gram staining 1.5.2. Giemsa staining 1.5.3. Methylene blue staining 1.5.4. Eosin staining	• Practical • Third party report • Oral questions • Projects
2. Apply knowledge of physiology	2.1. Introduction 2.2. Bacterial cell 2.3. Bacterial growth colony	• Written tests • Third party report • Practical

and nutrition of microorganisms	2.4. Staining techniques 2.5. Microbial metabolism 2.6. Microbial nutrition and growth	• Projects
3. Apply knowledge of microbial genetics	3.1. Introduction to microbial genetics 3.2. General structure 3.3. Functions 3.4. DNA replication 3.5. Control of microorganisms 3.6. Sensitivity tests 3.7. Microbial resistance	• Written tests • Third party report • Case Studies • Practical • Projects
4. Identify microbes of veterinary importance	4.1. Pathogen-host relationships 4.2. Microscopy of the microbes 4.2.1. Bacteria 4.2.2. Fungi 4.2.3. Viruses 4.2.4. Mycoplasma 4.2.5. Rickettsia 4.2.6. Chlamydia 4.3. Microbe culture and culture techniques 4.3.1. Blood agar 4.3.2. MacConkey agar 4.3.3. Mannitol salt agar 4.3.4. Dextrose broth 4.3.5. Glucose agar 4.4. Characteristics identification of organisms	• Written tests • Third party report • Interviews/ Oral questions • Practical • Projects

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		1	1:25
4.	Lecture/Theory room		1	1:25
5.	Laboratory		1	1:25
6.	Animal farm		1	1:25
7.	Library		1	1:25
8.	E-Library		1	1:25