MICROBIOLOGY

UNIT CODE: 0511 441 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 microbiology.

Unit duration: 50 hours

Unit Description

This unit specifies the competencies required by an animal health and production technician to apply knowledge of microbiology in animal health. It involves Perform basic laboratory techniques, knowledge of physiology and nutrition of microorganisms, knowledge of microbial genetics and identify 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	10
2.	Apply knowledge of physiology and nutrition of microorganisms	10
3.	Apply knowledge of microbial genetics	10
4.	Apply knowledge of microbes of veterinary importance	20
Total		**50**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Methods of assessment
1. Perform basic laboratory techniques	1.1 Laboratory equipment 1.1.1 Microscope 1.1.2 Slides 1.1.3 Bunsen burner	• Practical • Project • Written tests • Third party report

	1.1.4 Centrifuge	• Portfolio of evidence
	1.1.5 Spatula 1.1.6 Cover slip 1.1.7 Beakers 1.1.8 Petri dishes 1.1.9 Inoculating wire 1.1.10 Test tubes 1.2 Microbiological specimen 1.2.1 Blood 1.2.2 Swabs from wounds, the nose, or the mouth 1.2.3 Urine 1.2.4 Feces 1.2.5 Sputum 1.2.6 Surgical biopsies 1.2.7 Cerebrospinal fluid (CSF) 1.3 Staining and processing techniques 1.3.1 Gram staining 1.3.2 Giemsa staining 1.3.3 Methylene blue staining 1.3.4 Eosin staining	• Oral questions
2. Apply knowledge of physiology and nutrition of microorganisms	2.1 Physiology and nutrition of microorganisms 2.2 Bacterial cell 2.3 Bacterial growth 2.4 Staining technique 2.4.1 gram staining 2.4.2 Giemsa staining 2.4.3 Methylene blue staining 2.4.4 Eosin staining 2.5 Microbe physiology and nutrition	• Practical • Project • Written tests • Third party report • Portfolio of evidence • Oral questions

3. Apply knowledge of	3.1 Introduction to microbial genetics 3.2 Microbes reproduction	• Practical • Project

microbial genetics	3.2.1 Bacteria 3.2.2 Fungi 3.2.3 Viruses 3.2.4 Mycoplasma 3.2.5 Rickettsia 3.2.6 Chlamydia 3.3 Sensitivity tests of microbes 3.4 Microbial resistance	• Written tests • Third party report • Portfolio of evidence • Oral questions
4. Apply knowledge of microbes of veterinary importance	4.1 Microbes of veterinary importance 4.1.1 Bacteria 4.1.2 Fungi 4.1.3 Viruses 4.1.4 Mycoplasma 4.1.5 Rickettsia 4.1.6 Chlamydia 4.2 Pathogen-host relationships 4.3 Microscopy of the microbes 4.4 Microbes culture 4.4.1 Blood sugar 4.4.2 Mackonkey agar 4.4.3 Mannitol salt agar 4.4.4 Dextrose broth 4.4.5 Glucose agar 4.5 Unique characteristics of organisms	• Practical • Project • Written tests • Third party report • Portfolio of evidence • Oral questions

Suggested Methods of Delivery

- Practical
- Projects
- Demonstrations

- Group discussion
- Direct instructions

Recommended Resources for 25 trainees

S/NO	Category/Item	Description/specification	Qty	Recommended ratio (item: trainee)
	Projector	EPSOM	1	1:25
	Whiteboard/smartboard	2.5 By 1.5.M	1	1:25
	Desktop/computer		1	1:25
	Classroom	Well-lit with 25 seats	1	1:25
	Library	Equipped with microbiology and E- section	1	1:25
	Animal farm	As by KVB guidelines	-	-
	Microscope		5	1:5
	Autoclave		5	1:5
	Hot air hooven		1	1:25
	Spectrophotometer		5	1:5
	pH meter		25	1:1
	Analytical balance		25	1:1
	Slides	1000	-	-
	Bunsen burner		25	1:1
	Centrifuge		1	1:25
	Spatula		25	1:1
	Cover slip	1000	-	-
	Beakers	200	-	-
	Petri dishes	100	-	-
	Inoculating wire	100	-	-
	Test tubes	500	-	-
	Gram stains	1 Litre	-	-
	Giemsa stains	1 Litre	-	-
	Methylene blue stains	1 Litre	-	-
	Eosin stains	1 Litre	-	-