

APPLY KNOWLEDGE OF MICROBIOLOGY

UNIT CODE: 0511 541 08A

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

UNIT DESCRIPTION

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

EL/EMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes, which make up workplace function.	These are assessable statements, which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i>
1. Perform basic laboratory techniques	1.1 Basic laboratory equipment is identified based on work requirement 1.2 Microbiological specimen is identified as per work requirement 1.3 Basic staining and processing techniques are applied as per work procedure
2. Apply knowledge of physiology and nutrition of microorganisms	2.1 Bacterial cell knowledge is applied as per work requirement 2.2 Bacterial growth colony knowledge is applied as per work procedure 2.3 Staining technique is applied as per the work requirement 2.4 Microbe physiology and nutrition knowledge is applied as per work requirement
3. Apply knowledge of microbial	3.1 Microbes reproduction knowledge is applied as per work procedure

genetics	3.2 Sensitivity tests of microbes to drugs are performed as per work procedure 3.3 Microbial resistance to drugs knowledge is applied as per work requirement
4. Identify microbes of veterinary importance	4.1 Pathogen-host relationships knowledge is applied as per work requirement 4.2 Microscopy of the microbes is performed based on the workplace procedures 4.3 Microbe culture is performed based on work procedures 4.4 Unique characteristics of organisms are identified as per work procedure

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variables	Range May include but not limited to:
1. Laboratory equipment include but not limited to:	● Microscope ● Slides ● Bunsen burner ● Centrifuge ● Spatula ● Cover slip ● Beakers ● Petri dishes ● Inoculating wires ● Test tubes
2. Staining include but not limited to:	● Gram staining ● Giemsa staining ● Methylene blue staining ● Eosin staining

3. Microbes include	● Bacteria ● Fungi ● Viruses ● Mycoplasma ● Rickettsia ● Chlamydia
4. Culture media include but not limited to:	● Blood agar ● MacConkey agar ● Mannitol salt agar ● Dextrose broth ● Glucose agar

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Organizing skills
- Analytical skills
- Interpersonal skills
- Communication skills
- Problem-solving
- Critical thinking

Required Knowledge

The individual needs to demonstrate knowledge of:

- The role of microbiology in animal health
- The nature and appropriate environmental conditions for the survival of microorganisms
- Diseases and physiological disorders associated with microorganisms

- Appropriate treatment and management of the various animal diseases caused by microorganisms
- Various laboratory tests in the diagnosis of diseases

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified basic laboratory equipment based on work requirement 1.2 Identified microbiological specimen as per work requirement 1.3 Applied basic staining and processing techniques as per work procedure 1.4 Applied bacterial cell knowledge as per work requirement 1.5 Applied bacterial growth colony knowledge as per work procedure 1.6 Applied staining methods knowledge as per the work requirement 1.7 Applied microbe physiology and nutrition knowledge as per work requirement 1.8 Applied microbe's reproduction knowledge as per work procedure 1.9 Performed sensitivity tests of microbes to drugs as per work procedure 1.10 Applied microbial resistance to drugs knowledge as per work requirement 1.11 Applied pathogen-host relationships knowledge as per work requirement 1.12 Performed microscopy of the microbes based on the workplace procedures
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	1.13 Performed microbe culture based on work procedure 1.14 Identified unique characteristics of organisms as per work procedure
2. Resource Implications	The following resources must be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activities or tasks
3. Methods of Assessment	Competency may be assessed through: 3.1. Written tests 3.2. Third party reports 3.3. Oral questioning 3.4. Interview 3.5. Observation
4. Context of Assessment	Competency may be assessed in a: Workplace or simulated workplace
5. Guidance information for assessment	Holistic assessment with related units in the sector