CONDUCT SCIENTIFIC RESEARCH

ISCED CODE: 0542 551 09A

TVET CDACC CODE: APB/OS/AB/CC/05/6/MA

UNIT DESCRIPTION

This unit specifies the competencies required to conduct scientific research**.** It involves preparing scientific research proposal, carrying out laboratory research and analyzing the laboratory research findings.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace functions	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements ***(Bold and italicized terms are elaborated in the range)***
1.Prepare scientific research proposal	1.1 Scientific research problem is identified based on existing research gap 1.2 Research objectives are developed according to research problem 1.3 Research questions or hypothesis are designed based on research objectives 1.4 Research concept note is developed as per standard research procedures 1.5 Scientific research proposal is developed as per standard research procedures

2.Apply scientific research methods	2.1 ***Scientific study design*** is determined in accordance with research procedures. 2.2 Sample size is determined based on statistical formulae. 2.3 ***Sampling techniques*** are determined in accordance with scope and research methodology 2.4 Research materials are identified based on scope and research methodology 2.5 Data is collected in accordance with research

	methodology
Analyze scientific research findings	3.1 ***Data analysis tools*** are assembled as per research proposal 3.2 Data analysis is performed based on research proposal 3.3 Research report is prepared and disseminated as per scientific research procedure.

RANGE

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

Variable	**Range**
1. Scientific study design includes but not limited to:	• Descriptive • Analytic
2. Sampling techniques include but not limited to:	• Probability • Non-probability
3. Data analysis tools include but not limited to:	• Microsoft excels • Python • Statistical package for social sciences (SPSS) • Statistical analysis System (SAS)

REQUIRED KNOWLEDGE AND SKILLS

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

Required knowledge

The individual needs to demonstrate knowledge of:

- Scientific report writing
- Occupational safety and health
- Basic mathematics
- Computer application
- Microscopy
- Taxonomy

- Animal anatomy and physiology
- Animal pathology

Required skills

The individual needs to demonstrate the following skills:

- Problem solving
- Digital literacy
- Communication
- Interpersonal
- First aid
- Photography
- Report writing
- Presentation
- Analytical

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified scientific research problem based on existing research gap 1.2 Developed research concept note as per standard research procedures 1.3 Developed scientific research proposal as per standard research procedures
2. Resource implications	The following resources should 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 in this unit may be assessed through: 3.1 Projects 3.2 Portfolio of evidence 3.3 Oral assessment 3.4 Written tests
4 Context of assessment	Competency may be assessed in a: Workplace or simulated workplace
5 Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.