APPLY SCIENTIFIC RESEARCH

ISCED UNIT CODE: 0811 511 10A

TVET CDACC UNIT CODE: DA/OS/PM/CC/04/6/MA

UNIT DESCRIPTION

This unit specifies the competencies required by a Dairy Plant Technologist level 6 to apply Research. It involves preparing scientific research proposal, applying scientific research methods and analyzing scientific research finding

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 are designed based on research objectives 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 problem and research data 2.2 Sample size is determined based on the research methodology 2.3 ***Sampling techniques*** are determined in accordance with scope and research methodology

	2.4 Ethical considerations are determined based on research methods utilized 2.5 Research materials are identified based on scope and research methodology 2.6 Data is collected in accordance with research methodology
3. Analyze scientific research finding	3.1 ***Data analysis methods*** are identified as per job requirement. 3.2 Data analysis is performed as per work procedure. 3.3 Research report is prepared as per work 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 may include but are not limited to:	• **Hypothesis** • **Study Population** • **Study design** • **Variables and measurements** • **Data** collection methods
2. Sampling techniques may include but are not limited to:	• **Random Sampling** • **Stratified Sampling** • **Cluster Sampling**
3. Data analysis methods may include but are not limited to:	• Descriptive statistics • Inferential statistics • Correlation analysis

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 research proposals
- Research methods
- Scientific research analysis
- Data collection techniques
- Types of research data

Required skills

The individual needs to demonstrate the following skills:

- Communication skills
- Problem solving
- Analytical skills
- Critical thinking
- Problem solving
- Ethical
- Social awareness

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 objectives according to research problem 1.3 Developed scientific research proposal as per standard research procedures 1.4 Determined Scientific study designs in accordance with research problem and research data 1.5 Identified research materials based on scope and research methodology 1.6 Collected Data in accordance with research methodology

	1.7 Performed Data analysis as per work procedure. 1.8 Prepared research report as per work procedure.
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 Practical assessment 3.2 Oral questioning 3.3 Portfolio of evidence 3.4 Third party report 3.5 Written tests
4. Context of assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated work environment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.