

APPLY RESEARCH METHODS

UNIT CODE: MATH/OS/AS/CC/03/6/A

UNIT DESCRIPTION

This unit covers the competencies required to carry out statistical data management. It involves formulating the research problem, carry out literature review, develop research objectives, develop research design and sample design, develop research budget proposal & time plan, collect research data, analyse collected research data, interpret findings and present findings

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicised terms are elaborated in the Range)</i>
1. Formulating the Research Problem	1.1 The proposal title is stated as per the problem and general objectives/research questions/hypotheses. 1.2 The background of the study is outlined as per the study problem. 1.3 The problem statement is formulated as per the research proposal 1.4 Hypotheses are stated as per the research objectives. 1.5 The importance/significance of the study is stated as per the problem statement.
2. Carry out Extensive Literature Review	2.1 Literature is reviewed as per the problem statement 2.2 Information sources including citations and authors relevant to the research is assessed and captured as per the literature review. 2.3 Referencing is done as per the citations 2.4 Theoretical and conceptual framework are captured as per the problem statement
3. Develop research objectives	4.4 Research objectives are developed as per the research problem 4.5 Research objectives are stated as per the research problem 4.6 Research hypotheses are formulated as per the objective

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicised terms are elaborated in the Range)</i>
4. Develop Research Design and Sample Design	4.1 Research design is determined as per the problem statement. 4.2 The <i>scientific methodology</i> is captured as per the problem statement. 4.3 The sample size is determined as per the procedure
5. Develop research budget proposal & Time plan	5.4 Direct costs are determined and estimated as per the research design 5.5 Indirect costs are determined and estimated as per the research design. 5.6 The budget narratives are captured as per the cost estimates. 5.7 Total estimates are made and captured as per the costs. 5.8 Time plan is developed as per stipulated time
6. Collect research Data	1.1 Use of proposed research design is demonstrated as per the research proposal. 1.2 Knowledge of data ethics and confidentiality is demonstrated as per the procedure. 1.3 Questionnaires are Digitised as per the procedure 1.4 Knowledge of law and human rights as well as religious and cultural believes is demonstrated as per the research. 1.5 Data collection is done as per the set research design. 1.6 Representative samples are selected as per the research design
7. Analyse collected research Data	7.1 Data processing techniques are applied as per the procedures 7.2 Descriptive tools and techniques are applied as per the procedures 7.3 Inferential data analysis tools are applied as per the research design
8. Interpretation research findings	8.1 Descriptive outputs are interpreted as per the summaries

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicised terms are elaborated in the Range)</i>
	8.2 <i>Parameter estimates</i> are interpreted as per the statistical model output 8.3 Predictions are made as per the model estimates 8.4 Hypothesis are tested and decisions made as per the problem
9. Present research findings	9.1 Report is prepared for presentation to stakeholders and interested parties as per results 9.2 The findings are presented as per the workplace 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
<ul style="list-style-type: none"> Scientific methodology may include but is not limited to: 	<ul style="list-style-type: none"> Methods of data collection and analysis
<ul style="list-style-type: none"> Parameter estimates may include but is not limited to: 	<ul style="list-style-type: none"> Slope constants

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

- Sources of research problems
- Steps in formulation of a research problem
- Reviewing the literature
- Formulation of objectives
- Research design

- Sample design
- Research instruments
- Piloting the questionnaire
- Collecting data
- Processing and analysing data
- Reporting the findings

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrate knowledge of source of research problems 1.2 Demonstrate knowledge to formulation of a research a problem 1.3 Demonstrate knowledge research objectives 1.4 Demonstrate knowledge of research hypothesis 1.5 Demonstrate knowledge of reviewing of literature 1.6 Demonstrate knowledge of citations and referencing 1.7 Demonstrate formulation of research objectives 1.8 Demonstrate knowledge of research designs 1.9 Demonstrate knowledge of research instruments 1.10 Demonstrate knowledge of piloting of research instrument 1.11 Demonstrate knowledge of data collection
2. Resource Implications	<p><i>The following resources must be provided:</i></p> <ul style="list-style-type: none"> 2.1 Computer 2.2 Internet 2.3 Datasets 2.4 Books in statistics 2.5 Library books
3. Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Oral questioning 3.2 Practical Tests 3.3 Witten Tets

4. Context of Assessment	Competency may be assessed individually in the actual workplace or through a simulated work place environment or during Industrial Attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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