



**REPUBLIC OF KENYA**

**COMPETENCY-BASED MODULAR CURRICULUM**

**FOR**

**AGRICULTURE AND EXTENSION LEVEL 6  
(CYCLE 3)**

**ISCED PROGRAMME CODE: 0811 554 A**



**TVET CDACC  
P.O. BOX 15745-00100 NAIROBI**

## **SCIENTIFIC RESEARCH**

**UNIT CODE:** 0111 551 20 A

**TVET CDACC UNIT CODE:** AGR/CU/EXT/CR/02/6/MA

**UNIT DURATION:** 80 HOURS

### **Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Conduct Scientific Research**

### Unit Description

This unit specifies the competencies required to conduct Applied research. It involves preparing scientific research proposal, applying scientific research methods and analyzing scientific research finding.

### Summary of Learning Outcomes

By the end of this unit, the learner should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Prepare scientific research proposal	20
2.	Apply scientific research methods	40
3.	Analyze scientific research finding	20
<b>Total</b>		<b>80</b>

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Prepare scientific research proposal	<b>Theory</b> 1.1 Scientific research proposal 1.1.1 Definition of terms 1.1.2 Types of research proposal 1.1.2.1 Descriptive 1.1.2.2 Quantitative 1.1.2.3 Qualitative 1.1.2.4 Case study 1.2 Uses of research proposal 1.3 Identification of research problems 1.4 Developing objectives of research proposal 1.5 Designing data collection method	<ul style="list-style-type: none"><li>• Written tests</li><li>• Third party report</li><li>• Reflection papers</li><li>• Projects</li><li>• Interviews/ Oral questions</li><li>• Workshop reports</li><li>• Individual/group assignments</li></ul>

	<p>1.5.1 Questionnaires</p> <p>1.5.2 Interviews</p> <p>1.5.3 Experiment</p> <p>1.5.4 Survey</p> <p>1.5.5 Observation</p> <p>1.6 Structure of a research proposal</p> <p>1.6.1 Cover page</p> <p>1.6.2 Abstract</p> <p>1.6.3 Introduction</p> <p>1.6.4 Literature review</p> <p>1.6.5 Methodology</p> <p>1.6.6 Summary</p> <p>1.6.7 Conclusion</p> <p>1.6.8 Recommendation</p> <p><b>Practice</b></p> <p>1.7 Develop a research proposal and present.</p>	<ul style="list-style-type: none"> <li>• Case Studies</li> <li>• Practicals</li> </ul>
2. Scientific research methods	<p><b>Theory</b></p> <p>2.1 Research methods</p> <p>2.1.1 Definition of terms</p> <p>2.1.2 Types of research methods</p> <p>2.1.2.1 Questionnaires</p> <p>2.1.2.2 Interviews</p> <p>2.1.2.3 Experiment</p> <p>2.1.2.4 Survey</p> <p>2.1.2.5 Observation</p> <p>2.2 Determine Sampling techniques</p> <p>2.2.1 Probability</p> <p>2.2.2 Non-probability</p> <p>2.3 Identification of research materials to be used.</p>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Third party report</li> <li>• Reflection papers</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Workshop reports</li> <li>• Individual/group assignments</li> <li>• Case Studies</li> <li>• Practicals</li> </ul>

	<p>2.3.1 Encyclopedia</p> <p>2.3.2 Papers</p> <p>2.3.3 Books</p> <p>2.3.4 Articles</p> <p>2.3.5 Journals</p> <p>2.3.6 Website</p> <p><b>Practice</b></p> <p>2.4 Collect Data according to 2.1.2</p>	
3. Analyse scientific research findings	<p><b>Theory</b></p> <p>1.1 Research findings</p> <p>1.1.1 Definition of terms</p> <p>1.1.2 Identify data analysis methods</p> <p>1.1.2.1 ANOVA</p> <p>1.1.2.2 Measure of central tendency</p> <p>1.1.2.3 Measure of dispersal</p> <p><b>Practice</b></p> <p>3.2 Prepare research report using the methods in 3.1.2.</p>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Third party report</li> <li>• Reflection papers</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Workshop reports</li> <li>• Individual/group assignments</li> <li>• Case Studies</li> <li>• Practicals</li> </ul>

### Suggested Methods of Instruction

- Role playing
- Group discussion
- Direct instruction

### Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
<b>A</b>	<b>Learning Materials</b>			
7.	Journals		5 pcs	1:5
8.	writing materials		50	2:1
9.	Charts		5	1:5
10.	PowerPoint presentations	For trainer's use		
11.	Whiteboard		1	1:25
12.	Assorted color of whiteboard markers	For trainers use		
13.	Printers		1	1:25
<b>B</b>	<b>Learning Facilities &amp; infrastructure</b>			
5.	Lecture/theory room		1	1:25
6.	Projector		1	1:25
7.	Assorted Flash Cards		25	
8.	Site		1	1:25
<b>C</b>	<b>Consumable materials</b>			
1.	Printing Papers	Ream	1	1:25
2.	Assorted color of whiteboard marker	For trainers use		
<b>D</b>	<b>Tools and Equipment</b>			
1.	Paper questionnaire		25	1:1
2.	Paper checklist		25	1:1