

## SCIENCE LABORATORY RESEARCH

**UNIT CODE:** 0588 441 11A

**TVET CDACC UNIT CODE:** SLT/CU/SL/CC/02/5/MA

**UNIT DURATION:** 100 Hours

### **Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Conduct Science Laboratory research.

### **Unit Description**

This unit outlines the necessary competencies for performing research in a science laboratory. It includes the preparation of tools for data collection, the execution of data collection in the laboratory, and the analysis of the collected research data.

### **Summary of Learning Outcomes**

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

S/No	Learning Outcomes	Duration (Hours)
1.	Prepare science laboratory research data collection tools	30
2.	Carry out science laboratory research data collection	40
3.	Carry out science laboratory research data analysis	30
	Total	100

### **Learning Outcomes, Content and Suggested Assessment Methods**

Learning Outcome	Content	Suggested Assessment Methods
1. Prepare science laboratory research data collection tools.	1.1 Project topics 1.2 Literature review 1.3 Study site 1.4 Sample size determination 1.5 Materials and methods 1.6 Ethical considerations 1.7 Data collection tools: 1.7.1 Questionnaires	<ul style="list-style-type: none"><li>Practical</li><li>Project</li><li>Third party report</li><li>Portfolio of evidence</li><li>Written test</li><li>Oral test</li></ul>

	1.7.2 Photography 1.7.3 Videos tapes 1.7.4 Google forms	
2 Carry out science laboratory research data collection.	2.1 Data collection methods 2.1.1 Interviews 2.1.2 Surveys 2.1.3 Observations 2.2 Experiments 2.3 Secondary data sources 2.4 Direct measurements	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Written test</li> <li>• Oral test</li> </ul>
3 Carry out science laboratory research data analysis	3.1 Data organization 3.1.1 Data formatting 3.1.2 Data cleaning 3.1.3 Data coding 3.2 Data analysis methods 3.3 Compiling of research report. 3.3.1 Results 3.3.2 Discussion 3.3.3 Conclusion 3.3.4 Recommendations 3.3.5 References\\ 3.3.6 Appendices 3.4 Submission of the research report	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Written test</li> <li>• Oral test</li> </ul>

### Suggested Methods of Instruction

- Demonstration
- Viewing of related videos
- Discussion
- Direct Instruction

### Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	<b>Learning Materials</b>			
7.	Power point presentations	For trainer's use	1	1:25

<b>8.</b>	Computer	For trainer's use	1	1:25
<b>9.</b>	Projector	For trainer's use	1	1:25
<b>10.</b>	Standard manuals/SOPs	For trainer's use	<b>1</b>	1:25
<b>11.</b>	Flip charts	For trainer's use	<b>1</b>	1:25
<b>12.</b>	Stationeries	For trainee use	<b>25</b>	1:1
<b>B</b>	<b>Learning Facilities &amp; infrastructure</b>			
	<b>Lecture/theory room</b>			
	Standard science laboratory	For trainee use	<b>1</b>	1:25
	Lecture room	For trainee use	<b>1</b>	1:25
<b>C</b>	<b>Consumable materials</b>			
<b>1.</b>	Disinfectant	For trainee use	<b>25</b>	1:1
<b>4.</b>	Gloves	For trainee use	<b>25</b>	1:1
<b>5.</b>	Laboratory coats	For trainee use	<b>25</b>	1:1
<b>6.</b>	Face Masks	For trainee use	<b>25</b>	1:1
<b>D</b>	<b>Tools and Equipment</b>			
<b>5.</b>	First aid kit	For trainee use	<b>1</b>	1:25
<b>6.</b>	Goggles	For trainee use	<b>25</b>	<b>1:1</b>
<b>7.</b>	Safety boots	For trainee use	<b>25</b>	<b>1:1</b>