

SCIENCE LABORATORY PRACTICE

UNIT CODE: 1022 441 02A

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

UNIT DURATION: 180 Hours

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Science Laboratory Practice

Unit Description

This unit specifies the competencies required to perform standard laboratory practices. It involves performing laboratory safety procedures, maintaining laboratory resources and preparing laboratory reagents and chemicals.

Summary of Learning Outcomes

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

S/No	Learning Outcomes	Duration (Hours)
1.	Perform laboratory safety procedure	60
2.	Maintain laboratory resources	60
3.	Prepare laboratory reagents and chemicals	60
Total		180

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Perform laboratory safety procedure	1.1.Science laboratory PPEs 1.1.1 Lab coats 1.1.2 Gloves 1.1.3 Overalls 1.1.4 Goggles 1.1.5 Muffs 1.1.6 Face shields 1.1.7 Helmets	<ul style="list-style-type: none">• Practical• Project• Third party report• Portfolio of evidence• Written test• Oral test

	<ul style="list-style-type: none"> 1.1.8 Hair nets 1.1.9 Respirators 1.1.10 Masks 1.2.Laboratory hazards and risks <ul style="list-style-type: none"> 1.2.1 Chemical 1.2.2 Biological 1.2.3 Electrical 1.2.4 Radioactive 1.2.5 Musculoskeletal stresses 1.2.6 Electrical 1.2.7 Physical 1.3.Handling and storage of laboratory chemicals and reagents <ul style="list-style-type: none"> 1.3.1 Acids 1.3.2 Bases 1.3.3 Salts 1.3.4 Indicators 1.3.5 Distilled water 1.4.Laboratory waste disposal <ul style="list-style-type: none"> 1.4.1 Sharp objects 1.4.2 Glassware 1.4.3 Biological samples 1.4.4 General lab waste 1.4.5 Wipes 1.4.6 Gloves 1.4.7 Tissues 1.4.8 Chemicals 1.4.9 Radioactive materials 1.4.10 Electrical materials 1.5.Laboratory safety rules 1.6.Risk assessment in the laboratory 1.7.Types of laboratory related Injuries and their treatment 1.8.First aid procedures. 1.9.Development of emergency response procedures and preparedness. 	
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	1.10. Maintenance of records of hazards, risk assessment and control measures	
2. Maintain laboratory resources	2.1 Laboratory inventory maintenance 2.2 Maintain laboratory equipment and apparatus 2.2.1 Calibration 2.2.2 Cleaning 2.2.3 Dusting 2.2.4 Painting. 2.3 Storage of laboratory resources 2.4 Disposal of obsolete laboratory resources	<ul style="list-style-type: none"> • Practical • Project • Third party report • Portfolio of evidence • Written test • Oral test
3. Prepare laboratory reagents and chemicals	3.1 Assembly of laboratory equipment 3.1.1 Bunsen burner 3.1.2 Microscopes 3.1.3 Hot plates 3.1.4 Magnetic stirrer 3.1.5 Water baths 3.1.6 Oven 3.1.7 Freezers 3.1.8 Furnace 3.2 Assembly of laboratory of laboratory apparatus 3.2.1 Balances 3.2.2 Wash bottles 3.2.3 Glass ware 3.2.4 Crucibles 3.2.5 Brushes 3.2.6 Filter papers 3.2.7 Pestle and mortar 3.3 Preparation of laboratory reagents and chemicals 3.3.1 Acids 3.3.2 Bases 3.3.3 Salts 3.3.4 Indicators 3.3.5 Distilled water 3.4 Storage of laboratory reagents and chemicals	<ul style="list-style-type: none"> • Practical • Project • Third party report • Portfolio of evidence • Written test • Oral test

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	Learning Materials			
1.	Computer	For trainer's use	1	1:25
2.	Projector	For trainer's use	1	1:25
3.	Standard manuals/SOPs	For trainer's use	1	1:25
4.	Flip charts	For trainer's use	1	1:25
5.	White /black board	For trainer's use	1	1:25
B	Learning Facilities & infrastructure			
	Lecture room	For trainee use	1	1:25
	Standard science laboratory	For trainee use	1	1:25
	Lecture room	For trainee use	1	1:25
C	Consumable materials			
1.	Stationeries	For trainee use	25	1:1
2.	Gloves	For trainee use	25	1:1
3.	Laboratory coats	For trainee use	25	1:1
4.	Goggles	For trainee use	25	1:1
5.	Face masks	For trainee use	25	1:1
D	Apparatus and Equipment			
1.	Compound light microscope	For trainee use	5	1:5
2.	Safety boot	For trainee use	25 pairs	1:1

3.	Laboratory coats	For trainee use	25	1:1
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