



**REPUBLIC OF KENYA**

**COMPETENCY BASED MODULAR CURRICULUM**

**FOR**

**ANALYTICAL CHEMISTRY TECHNOLOGY**

**KNQF LEVEL 6**

**(CYCLE 3) PROGRAMME ISCED CODE: 0531 554A**



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

## CHEMICAL SAMPLES PREPARATION

**ISCED UNIT CODE: 0531 551 01A**

**TVET CDACC UNIT CODE: ASC/CU/ACHEM/CR/01/6/MA**

### Relationship to Occupational Standards

This unit addresses the Unit of Competency: Prepare Chemical Samples.

**Duration:** 200 Hours

### Unit Description

This unit covers the competencies required in preparing chemical samples. It involves designing sampling plan, collecting and storing chemical samples.

### Summary of Learning Outcomes

S/No	Learning Outcomes	Duration (Hours)
1.	Design sampling plan	30
2.	Collect Chemical Sample	90
3.	Store Chemical samples	80
<b>Total</b>		<b>200</b>

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Design Sampling plan	1.1 Sample type 1.1.1 Solids, 1.1.2 liquids 1.1.3 gases 1.2 Development of Sampling frame	<ul style="list-style-type: none"><li>• Practical Assessment</li><li>• Project-Based Assessment</li><li>• Portfolio of Evidence</li><li>• Written Assessment</li></ul>

	1.3 Sample size identification 1.4 Selection of sampling tools and apparatus 1.5 Sampling procedure	
2. Collect Chemical Sample	2.1 Sampling points 2.2 Sampling 2.3 Sample pretreatment 2.3.1 Size reduction, 2.3.2 Extraction 2.3.3 Digestion 2.4 Sample Packaging 2.5 Sample Labelling 2.6 Sample Transportation	<ul style="list-style-type: none"> <li>• Practical Assessment</li> <li>• Project-Based Assessment</li> <li>• Portfolio of Evidence</li> <li>• Written Assessment</li> </ul>
3. Store Chemical samples	3.1 Sample processing 3.2 Sample preservation techniques 3.2.1 Refrigeration 3.2.2 Oven 3.2.3 Chemical storage 3.3 Sample labelling and storage.	<ul style="list-style-type: none"> <li>• Practical Assessment</li> <li>• Project-Based Assessment</li> <li>• Portfolio of Evidence</li> <li>• Written Assessment</li> </ul>

### **Suggested Methods of Instruction**

- 1 Practical
- 2 Projects
- 3 Demonstrations
- 4 Group discussion
- 5 Direct instructions

## Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
<b>A</b>	<b>Learning Materials</b>			
1.	Power point presentations	For trainer's use	1	1:25
2.	Desktop computer/laptop	For trainer's use	1	1:25
3.	Projector	For trainer's use	1	1:25
4.	Standard manuals/SOPs	For trainer's use	1	1:25
5.	Flip charts	For trainer's use	1	1:25
6.	Whiteboard	For trainer's use	1	1:25
7.	Assorted reference materials	For trainer's and trainee use	5	5:25
<b>B</b>	<b>Learning Facilities &amp; infrastructure</b>			
1.	Lecture/theory room	For trainer's and trainee use	1	1:25
2.	standard Science laboratory	For trainee use	1	1:25
3.	Internet connection	For trainee use	Enough	
4.	Assorted analytical instruments	For trainer's and trainee use	1	1:25
<b>C</b>	<b>Consumable materials</b>			
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.	Masks	For trainee use	25	1:1
5.	Covers slips	For trainee use	5	1:5
6.	Assorted whiteboard markers	For trainer's	enough	
7.	Assorted Glassware	For trainee use	enough	1:1
8.	Assorted equipment	For trainee use	enough	1:5
9.	Pestle and mortars	For trainee use	12	1:2
10.	Droppers/teat pipettes	For trainee use	25	1:1
11.	Assorted chemicals [acids, bases, solvents, salts]	For trainee use	enough	1:1
<b>D</b>	<b>Tools and Equipment</b>			
1.	Analytical balances	For trainee use	5	1:5
2.	First aid kit	For trainee use	5	1:25
3.	Furnace	For trainee use	1	1:25
4.	Oven	For trainee use	2	1:12
5.	Centrifuges	For trainee use	4	1:6
6.	refrigerator/freezer	For trainee use	1	1:25
7.	Water bath	For trainee use	3	1:8
8.	hot plate	For trainee use	6	1:4

9.	Sample collection apparatus	For trainee use	25	1:1
10.	Sample storage apparatus	For trainee use	25	1:1