

## INORGANIC AND ORGANIC CHEMISTRY

**UNIT CODE:** 0811 551 18 A

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

**UNIT DURATION:** 120 HOURS

### Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply inorganic and organic chemistry

### Unit Description

This unit specifies the competencies required to apply inorganic and organic chemistry. It involves applying physical chemistry principles, inorganic and organic chemistry concepts.

### Summary of Learning Outcomes

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

S/No	Learning Outcomes	Duration (Hours)
1.	To apply physical chemistry principles	40
2.	To apply inorganic chemistry concepts	40
3.	To apply organic chemistry concepts	40
<b>Total</b>		<b>120</b>

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Apply physical chemistry principles	<b>Theory</b> 1.1 Acid and bases 1.1.1 Definition of terms 1.1.2 Characteristics of acid and bases	<ul style="list-style-type: none"><li>• Written tests</li><li>• Third party report</li><li>• Reflection papers</li><li>• Projects</li></ul>

	<p>1.1.3 classification of acids and bases</p> <p>1.1.3.1 Strong acids and bases</p> <p>1.1.3.2 Weak acids and bases</p> <p>1.1.4 Uses of acids and bases</p> <p>1.1.5 Preparation of acids and bases</p> <p>1.2 Salts</p> <p>1.2.1 Definition of terms</p> <p>1.2.2 Characteristics of Salts</p> <p>1.2.3 classification of Salts</p> <p>1.2.4 Uses of Salts</p> <p>1.2.5 Preparation of Salts</p> <p>1.3 Application of ionic and chemical equilibrium properties</p> <p>1.4 Application of Gases properties</p> <p><b>Practice</b></p> <p>1.5 Prepare acids and bases</p> <p>1.6 Prepare Salts</p>	<ul style="list-style-type: none"> <li>• Interviews/ Oral questions</li> <li>• Workshop reports</li> <li>• Individual/group assignments</li> <li>• Case Studies</li> <li>• Practicals</li> </ul>
2. Apply inorganic chemistry concepts	<p><b>Theory</b></p> <p>2.1 Periodic table</p> <p>2.1.1 Definition of terms</p> <p>2.1.2 Elements of periodic table</p> <p>2.1.3 Atomic numbers</p> <p>2.1.4 Chemical bonds</p> <p>2.1.4.1 Ionic bonds</p> <p>2.1.4.2 Covalent bonds</p> <p>2.1.4.3 Metallic bonds</p> <p>2.1.4.4 Hydrogen bonds</p>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Reflection papers</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Workshop reports</li> <li>• Individual/group assignments</li> <li>• Practicals</li> </ul>
3. Apply organic chemistry concepts	<p><b>Theory</b></p> <p>3.1 Organic compounds</p> <p>3.1.1 Definition of terms</p> <p>3.1.2 Classes of organic compounds</p> <p>3.1.2.1 Carbohydrates</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</li> </ul>

	3.1.2.2 Proteins 3.1.2.3 Lipids 3.1.2.4 Hydrocarbons 3.2 Physical properties 3.2.1 Colour 3.2.2 Hardness 3.2.3 Mass 3.2.4 Solubility 3.3 Chemical properties 3.3.1 Ph 3.3.2 Chemical stability 3.3.3 Radioactivity 3.3.4 Flammability 3.3.5 Heat of combustion 3.4 Purification of synthesized compounds 3.4.1 Uses of purified compounds  <b>Practice</b> 3.5 Carry out purification of synthesized compounds	questions <ul style="list-style-type: none"> <li>• Workshop reports</li> <li>• Individual/group assignments</li> <li>• Case Studies</li> <li>• Practicals</li> </ul>
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### Suggested Methods of Instruction

- Role playing
- Group discussion
- Direct instruction

### Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/	Quantity	Recommended
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		Specifications		Ratio (Item: Trainee)
<b>A</b>	<b>Learning Materials</b>			
1.	Journals		5 pcs	1:5
2.	writing materials		50	2:1
3.	Charts		5	1:5
4.	PowerPoint presentations	For trainer's use		
5.	Whiteboard		1	1:25
6.	Printers		1	1:25
<b>B</b>	<b>Learning Facilities &amp; infrastructure</b>			
1.	Lecture/theory room		1	1:25
2.	Projector		1	1:25
3.	Assorted Flash Cards		25	
4.	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