SOIL SCIENCE

UNIT CODE: 0811 441 05A

TVET CDACC UNIT CODE: HE/CU/AHP/CC/25/5/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply Knowledge of soil science

UNIT DURATION: 30 Hours

Unit Description

This unit specifies the competencies required by an animal health and production technician to demonstrate knowledge of soil science. It involves applying knowledge of principles of soil science, apply knowledge of soil organisms and organic matter; and applying knowledge of soil fertility in fodder production.

Summary of Learning Outcomes

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

S/No	Learning Outcomes	Duration (Hours)
1.	Apply principles of soil science	10
2.	Apply knowledge of soil organisms and organic matter	10
3.	Apply knowledge of soil fertility in fodder production	10
Total		**30**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Apply principles of soil science	1.1. Introduction to soil science 1.2. Soil formation - broad categories of soil forming rocks, 1.3. Soil pysical properties 1.3.1. Soil texture	● Practical ● Project ● Written tests ● Third party report ● Portfolio of

	1.3.2. Soil aggregation 1.3.3. Soil consistency 1.3.4. Soil colour 1.3.5. Soil moisture 1.3.6. Soil air 1.3.7. Soil bulk density 1.3.8. Water holding capacity 1.4. Soil chemical properties 1.4.1. Soil pH 1.4.2. Soil EC 1.4.3. Cation exchange capacity 1.4.4. Percent base saturation 1.4.5. Salt index 1.5. Soil biological properties 1.5.1. Microbial activity 1.5.2. CN ratio 1.6. Factors influencing soil formation 1.6.1. Parent material 1.6.2. Climate 1.6.3. Topography 1.6.4. Biota 1.6.5. Time 1.7. Soil sampling methods 1.7.1. Grid sampling 1.7.2. Zone sampling 1.7.3. Conventional sampling	evidence ● Oral questions
2. Apply knowledge of soil organisms and organic matter	2.1. Introduction to Soil organisms 2.2. Effect of soil organisms 2.3. Organic matter.	● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions

3. Apply knowledge of soil fertility in fodder production	3.1. Soil fertility in fodder production 3.2. Organic farming 3.3. Fertilizers	● Practical ● Project ● Written tests ● Third party report ● Portfolio of evidence ● Oral questions

Suggested Methods of delivery

- Practical
- Projects
- Demonstrations
- Group discussion
- Direct instructions

Training resources for 25 trainees

S/No.	Category/Item	Description/Specification	Quantity	Recommended Ratio (Item: Trainee)
A	**Learning materials**			
1	Projector	EPSOM	1	1:25
2	Whiteboard/smartboard	2.5 By 1.5.M	1	1:25
3	Desktop/computer		1	1:25
B	**Learning Facilities & Infrastructure**			
1	Lecture/Theory room	Well-lit with 25 seats	1	1:25
2	Laboratory		1	1:25
3	Animal farm		1	1:25
4	Library	Equipped with soil science books and E- section	1	
C	**Consumable Materials**			
D	**Tools and Equipment**			
1	Soil Auger		5	1:5
2	Khaki bags		25	1:1
3	Buckets		5	1:5
4	Hoes		5	1:5
5	Machetes		5	1:5

6	Shovels		5	1:5
7	Digestion block		2	
8	UV-VIS Spectrophotometer		2	
9	Atomic absorption spectrophotometer (AAS)		2	
10	Flame photometer		2	