SOIL SCIENCE

ISCED UNIT CODE: 0811 541 06A

TVET CDACC UNIT CODE: HE/CU/AHP/CC/12/6/MA

Relationship to Occupational Standards

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

UNIT DURATION: 50 Hours

Unit Description

This unit specifies the competencies required by an animal health and production technologist to demonstrate knowledge of soil science. It involves applying knowledge of principles of soil science, identifying properties of soil, identifying 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	**20**
2.	Apply knowledge of soil organisms and organic matter	**15**
3.	Apply knowledge of soil fertility in fodder production	**15**
Total		**50**

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 physical properties 1.3.1. Soil texture	• Practical • Project • Portfolio of evidence • Third party report

	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	• Written assessment • Oral questioning
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 • Portfolio of evidence • Third party report • Written assessment

		• Oral questioning
3. Apply knowledge of soil fertility in fodder production	3.1.Soil fertility in fodder production 3.2.Organic farming 3.3.Fertilizers	• Written test • Practical • Third party report • Oral questions • Assignments

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)
	Learning materials			
1.	Projector		1	1:25
2.	Whiteboard/Smart board		1	1:25
3.	Desktop/computer		1	1:25
4.	Lecture/Theory room		1	1:25
5.	Soil science Laboratory		1	1:25
6.	Library		1	1:25
7.	E-Library		1	1:25
8.	Soil Auger		5	1:5
9..	Khaki bags		25	1:1
10.	Buckets		5	1:5

11.	Hoes		25	1:1
12.	Machetes		5	1:5
13.	Shovels		5	1:5
14.	Digestion block		2	1:25
15.	UV-VIS Spectrophotometer		2	1:25
16.	Atomic absorption spectrophotometer (AAS)		2	1:25
17.	Flame photometer		2	1:25