BEE BIOLOGY

UNIT CODE: 0811 341 04A

TVET CDACC UNIT CODE: AGR/CU/API/CC/02/4/MA

UNIT DURATION: 80 Hours

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply bee biology knowledge

Unit Description

This unit covers the competencies required to apply bee biology knowledge. It involves identifying bee species, applying knowledge of bee lifecycle and caste and applying knowledge of bee external anatomy.

Summary of learning outcomes

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

S/No	Learning Outcomes	Duration (Hours)
1.	Identify bee species	30
2.	Apply knowledge of bee lifecycle and caste	30
3.	Apply knowledge bee external anatomy	20
Total		**80**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1 Identify bee species	1.1 Introduction to bees 1.1.1 Importance of bees 1.1.2 Types of bee species 1.1.2.1 Honeybees (Apis) species ✓ Apismellifera ✓ Apisflorea ✓ Apisdorseta 1.1.2.2 Bumblebees (Bombus 1.1.2.3 Solitary Bees 1.1.2.4 Sweat Bees (Halictidae) 1.2 Honey bees sub species ✓ Carniolan honey bee ✓ Apismelliferasimensis ✓ Apismelliferaadansonii ✓ East African lowland honey bee ✓ European dark bee ✓ Caucasian honey bee 1.3 Races of honeybees ✓ European honey bee ✓ African wild bee ✓ Italian honey bee ✓ German black bee	• Practical • Project • Written tests • Third party report • Portfolio of evidence • Oral questions

2. Apply knowledge of bee lifecycle and caste	2.1 Bee castes / Bee colony 2.1.1 Queen 2.1.2 Workers (Nurse Bees, Foragers, House Bee and Guard Bees) 2.1.3 Drone 2.1.4 Brood 2.2 Bee developmental stages 2.3 Bee life cycle	• Practical • Project • Written tests • Third party report • Portfolio of evidence • Oral questions
3. Apply bee external anatomy	3.1 Queen bee external anatomy 3.2 Drone bee external anatomy 3.3 Worker bee external anatomy	• Practical • Project • Written tests • Third party report • Portfolio of evidence • Oral questions

Suggested Methods of Instruction

- Group discussion
- Project
- Direct instruction
- Project-Based Learning (PBL)
- Demonstrations

Recommended Resources for 25 Trainees

s/no	Items	Specifications	Quantity	Ratio
1.	Lecture room		**1**	**1:25**
2.	Projector		**1**	**1:25**
2.	Laptop		**1**	**1:25**
3.	Forceps		**5**	**1:5**
4.	Sweep nets		**15**	**1:2**
5.	identification charts		**15**	**1:2**

6.	killing insect bottles		**15**	**1:2**
7.	mounting boards		**15**	**1:2**
8.	mounting pins		**50**	**2:1**
9.	Colonised bee hives		**5**	**1:5**