REPUBLIC OF KENYA

COMPETENCY BASED MODULAR CURRICULUM

FOR AGRICULTURAL ENGINEERING
KNQF LEVEL 5

(CYCLE 3)

PROGRAMME ISCED CODE: 0716 454 A

TVET CDACC
P.O. BOX 15745-00100 NAIROBI

FARM STRUCTURES AND ROADS

UNIT CODE: 0716 451 10A

TVET CDACC UNIT CODE: ENG/CU/AGR/CR/03/5/MA

UNIT DURATION: 140 Hours

Relationship to Occupational Standards

This unit addresses the unit of competency: **Construct farm structures and roads**

Unit Description

This unit specifies the competencies required by an Agricultural Engineering Craftsperson to construct farm structures and roads. It involves designing farm structures and roads, constructing farm structures and roads and maintaining farm structures and roads.

Summary of Learning Outcomes

S/No	Learning Outcomes	Duration (Hours)
1.	Design farm structures and roads	40
2.	Construct farm structures and roads	80
3.	Maintain farm structures and roads	20
TOTAL		**140**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1 Design farm structures and roads	1.1 Types of farm structures 1.2 Process of designing farm structures and farm roads 1.3 Factors to consider when designing a farm structure 1.3.1 Purpose 1.3.2 Type of soil 1.3.3 Function of the structure	• Practical • Project • Portfolio of evidence • Third party report • Written tests

Learning Outcome	Content	Suggested Assessment Methods
	1.3.4 Topography 1.3.5 Farmers taste and preference 1.3.6 Drainage 1.4 Procedures in designing farm structures and farm roads 1.5 Procedure of designing drainage system 1.6 Costs involved in designing farms structures and farm roads 1.7 Structural Design and Optimization using AI systems 1.7.1 Smart Design Software 1.7.2 Material Optimization 1.7.3 Energy Efficiency Design	• Oral questioning
2 Construct farm structures and roads	2.1 Relevant tools and equipment in farm road construction 2.2 Relevant tools and equipment in farm structures construction 2.3 Construction materials and availability 2.4 Construction procedures 2.4.1 Farms structures construction procedures 2.4.2 Road construction procedures	• Practical • Project • Portfolio of evidence • Third party report • Written tests • Oral questioning
3 Maintain farm structures and roads	3.1 Maintenance activities 3.1.1 Corrective maintenance 3.1.2 Preventive maintenance 3.1.3 Predictive maintenance	• Practical • Project • Portfolio of evidence

Learning Outcome	Content	Suggested Assessment Methods
	3.1.4 Conditional maintenance 3.2 Importance of maintenance activities	• Third party report • Written tests • Oral questioning

Suggested Methods of Delivery

1. Demonstration
2. Projects
3. Group discussion
4. Direct instructions

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	**Learning Materials**			
1.	Projector		1	1:25
2.	Soil survey and classification manual		1	1:25
3.	Scientific calculators		25	1:25
4.	National and international standards		1	1:25
5.	Computer with internet		1	1:25
B	**Learning Facilities & infrastructure**			
1.	Classroom	40 M^2	1	1:25
C	**Consumable materials**			

	Stationery	Assorted	1 rim of printing papers 1 packet of pens 1packet of maker pens	1:25
D	**Tools and Equipment**			
	Construction tools and equipment			