

BUILDING WORKS MEASUREMENT PRINCIPLES

UNIT CODE: 0731 551 19A

TVET CDACC UNIT CODE: CON/ OS/ ARC/CR/07 /6 / MA

Relationship to Occupational Standards

This unit addresses the unit of competency: **Apply Building Works Measurements Principles**

Duration of Unit: 180 hours

Unit Description

This unit covers the principles required by an architectural technician in applying building works measurement principles. These principles include applying substructure works taking off principles, applying superstructure works taking off principles applying construction external work taking off principles and applying building works estimating and costing principles.

Summary of Learning Outcomes

S.NO	LEARNING OUTCOME	DURATION(HRS)
1.	Apply substructure works taking off principles	50
2.	Apply superstructure works taking off principles.	40
3.	Apply construction external work taking off principles	40
4.	Apply building works estimating and costing principles	50
TOTAL		180

Learning Outcomes, Content, and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
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1. Apply substructure works taking off principles	1.1. Substructure elements documentation. 1.1.1. trench excavation 1.1.2. reducing level 1.1.3. Blinding 1.1.4. Damp-proof membrane 1.1.5. Reinforcement bars 1.1.6. BRC mesh 1.1.7. Damp proof course 1.1.8. foundation strip 1.1.9. foundation walling 1.1.10. hard core fill 1.1.11. floor bed 1.2. Substructure elements quantification. 1.2.1. trench excavation 1.2.2. reducing level 1.2.3. Blinding 1.2.4. Damp-proof membrane 1.2.5. Reinforcement bars 1.2.6. BRC mesh 1.2.7. Damp proof course 1.2.8. foundation strip 1.2.9. foundation walling 1.2.10. hard core fill 1.2.11. floor bed 1.3. Substructure elements booking. 1.3.1. trench excavation 1.3.2. reducing level 1.3.3. Blinding 1.3.4. Damp-proof membrane 1.3.5. Reinforcement bars 1.3.6. BRC mesh 1.3.7. Damp proof course 1.3.8. foundation strip 1.3.9. foundation walling 1.3.10. hard core fill 1.3.11. floor bed	• Practical Assessment • Project • Third-Party Report • Written tests
2. Apply superstructure	2.1 Superstructure elements documentation. 2.1.1 Walling units	1. Practical Assessment 2. Project

works taking off principles.	2.1.2 Doors 2.1.3 Windows 2.1.4 Roof work 2.1.5 Fittings and fixtures 2.1.6 Finishes 2.2 Superstructure elements quantification. 2.2.1 Walling units 2.2.2 Doors 2.2.3 Windows 2.2.4 Roof work 2.2.5 Fittings and fixtures 2.2.6 Finishes 2.3 Superstructure elements quantities booking. 2.3.1 Walling units 2.3.2 Doors 2.3.3 Windows 2.3.4 Roof work 2.3.5 Fittings and fixtures 2.3.6 Finishes	3. Third-Party Report 4. Written tests
3. Apply construction external work taking off principles	3.1 External works elements documentation. 3.1.1 Landscaping works 3.1.1.1 Vehicular parking 3.1.1.2 Kerbs 3.1.1.3 Paving blocks 3.1.1.4 Cabro 3.1.2 Rendering works 3.1.3 Drainage works 3.1.3.1 Manholes 3.1.3.2 Inspection chambers 3.1.3.3 Soak pits 3.1.3.4 Septic tanks 3.1.3.5 Biodigester 3.2 External works elements quantification. 3.2.1 Vehicular parking 3.2.2 Kerbs 3.2.3 Paving blocks 3.2.4 Cabro	• Practical Assessment • Project • Third Party Report • Written tests

	3.2.5 Manholes 3.2.6 Inspection chambers 3.2.7 Soak pits 3.2.8 Septic tanks 3.2.9 Biodigester 3.3 External works elements quantities booking. 3.3.1 Vehicular parking 3.3.2 Kerbs 3.3.3 Paving blocks 3.3.4 Cabro 3.3.5 Manholes 3.3.6 Inspection chambers 3.3.7 Soak pits 3.3.8 Septic tanks 3.3.9 Biodigester	
4. Apply building works estimating and costing principles	4.1 Construction preliminary work unit rate build-up. 4.1.1 Access roads 4.1.2 Site clearance 4.1.3 Demolition work 4.2 Substructure work unit rate build-up. 4.2.1 Excavation works 4.2.2 Walling works 4.2.3 Concreting works 4.2.4 Hard-core fill 4.2.5 Blinding 4.3 Superstructure work unit rate build-up. 4.3.1 Superstructure walling 4.3.2 Doors and windows 4.3.3 Roofing 4.3.4 Finishes 4.4 External work unit rate build-up. 4.4.1 Landscaping works 4.4.2 Drainage works 4.4.3 Paving works	1. Practical Assessment 2. Project 3. Third Party Report 4. Written tests

	4.5 Bill of quantities preparation. 4.5.1 Squaring 4.5.2 Abstracting 4.5.3 Billing	
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Suggested Methods of Instruction

- Practicals
- Projects
- Demonstration
- Group Discussion
- Direct Instruction

Recommended Resources for 25 Trainees				
S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	Learning Materials			
B	Learning Facilities & Infrastructure			
1.	Whiteboards	For trainer's use	1 pc	1:25
2.	computers with the following software: Windows/Linux/Macintosh Operating System Microsoft Office Software Google Workspace Account Antivirus Software	For both trainer's and trainees' use	25	1:1
3.	Printers	For both trainer's and trainee's use	2	1:13
4.	External storage media	For both trainer's and trainee's use	1	1:1
5.	Projector	For both trainer's and trainee's use	1	1:25
6.	Smartboard/Smart TV	For both trainer's and trainee's use	1	1:25

7.	Chalkboard	For trainer's use	1 pc	1:25
8.	Internet connection	For both trainer's and trainee's use	1	1:25
9.	Instruction Room	9m by 8m	1	1:25
C	Consumable materials			
14.	Assorted colour of whiteboard markers	For trainee's use	10 pcs	10:1
15.	Printing Papers	For trainee's use	Reams	5:1
16.	Rolls Flip Charts	For both trainer's and trainee's use	5 pcs	1:5
17.	Dimension paper	For both trainer's and trainee's use	5 pcs	1:5
D	Tools and Equipment			
	Tape measure	For both trainer's and trainee's use	25 pcs	1:1
	Scientific Calculator	For both trainer's and trainee's use	25 pcs	1:1