BUILDING TECHNOLOGY AND SERVICES

UNIT CODE: CON/CU/ARC/CC/05/6/A

Relationship to Occupational Standards

This unit addresses the unit of competency: Apply principles of building technology and services

Duration of Unit: 200 hours

Unit Description

This unit describes the competencies required to survey construction site, prepare construction site, construct substructure, construct superstructure, perform mechanical works, install electrical works, prepare reinforced concrete, produce building elements, apply building finishes and fittings and perform landscaping

Summary of Learning Outcomes

1. Survey construction site
2. Prepare construction site
3. Construct substructure
4. Construct superstructure
5. Perform mechanical works
6. Install electrical works
7. Prepare reinforced concrete
8. Produce building elements
9. Apply building finishes and fittings
10. Perform landscaping
11. Perform building maintenance operations

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Survey construction site	• Principles of survey • Profiles • Contours • Maps • Survey equipment and tools • Significance of site investigation	• Observation • Oral questioning • Written tests • Projects practical assessments

	• Site investigation procedure
	• Site investigation elements/areas
	  • Soil
	  • Existing structures/services
	  • Labour and construction materials
	• Reconnaissance
	• Levelling
	• Vertical controls
	• Trial pits	

2. Prepare construction site	• Occupational health and safety precautions
	• Hoarding erection
	• Site clearance
	  • Methods of site clearance
	  • Tools and equipment used in site clearance
	  • Safety issues in site clearance
	• Setting out of building
	• Excavation procedures
	  • Methods of excavation
	  • Temporary support to excavations
	  • Groundwater control
		• Observation
		• Oral questioning
		• Written tests
		• Projects practical assessments

3. Construct substructure	• Site clearance
	  • Methods of site clearance
	  • Tools and equipment used in site clearance
	  • Safety issues in site clearance
	• Excavation
	  • Methods of excavation
	  • Temporary support to excavations
	  • Groundwater control
	• Methods used in levelling
		• Observation
		• Oral questioning
		• Written tests
		• Projects practical assessments

	• Cut • Fill • Cut and fill • Profile boards • Types of profile boards • Corner profile boards • Single profile boards • Use of profile boards • Foundations • Types of foundations • Materials used in construction of foundations • Hard core • Functions of hard core • Materials used • Characteristics of hard core material • Blinding • Functions of blinding • Materials used • Characteristics of blinding materials • Anti-termite treatment • Significance of anti-termite treatment • Chemicals used for anti-termite treatment • Safety precautions in chemical handling • Damp proofing • Significance of damp proofing • Materials used in damp proofing • Characteristics of damp proofing materials • Concrete bed construction • Mass concrete • Reinforced concrete	

4. Construct superstructure	• Setting out superstructure works
	• Superstructure concrete works
	  • Concrete in columns
	  • Concrete in suspended slabs and beams
	  • Formwork
	  • Reinforcement
	  • Curing of concrete
	• Superstructure walling
	  • Forms of wall construction
	  • Types of walls
	  • Materials used in wall construction
	  • Tools and equipment used in wall construction
	  • Damp proofing in walls
	• Roof construction
	  • Functional requirements of roofs
	  • Materials used in roof construction
	  • Types of roofs
	  • Parts of a roof
	  • Roof construction procedure
	• Roof cover
	  • Types of roof cover materials
	  ▪ Traditional roof cover
	  ▪ Modern roof cover
	  • Functional requirements of roof covers
	  • Roof underlays
	  • Roof cover laying procedure
	  ▪ Tiles
	  ▪ Concrete
	  ▪ Sheets
	• Rain water goods installation
	  • Gutter
	  • Downpipes
		• Observation
		• Oral questioning
		• Written tests
		• Projects practical assessments

	• Channels	
5. Perform mechanical works	• Pipework • service ducts • HVAC (Heating Ventilation Air Conditiong)	• Observation • Oral questioning • Written tests • Projects practical assessments
6. Install electrical fittings	• Safety precautions • Electrical conduits • socket boxes • Electrical conduits tests	• Observation • Oral questioning • Written tests • Projects practical assessments
7. Prepare reinforced concrete	• Preparation of Formwork • Steel fixing • Concreting procedures	• Observation • Oral questioning • Written tests • Projects practical assessments
8. Produce building elements	• Production of precast concrete • Timber components • Metal components • Stabilized soil components	• Observation • Oral questioning • Written tests • Projects practical assessments

9. Apply building finishes and fittings	• Types of building finished
	• Methods of finishes application
	• Finishes application procedures
	  • Tiles
	  • Paints
	  • Parquets
	  • Facing
	  • Pebble dash
	  • Plaster
	  • Render
	  • Floor screed
	  • Granolithic finish
	  • Terrazzo
		• Observation
		• Oral questioning
		• Written tests
		• Projects
		• practical assessments

	• Cladding	
10. Perform landscaping	• Ground preparations • Setting out of pathways and driveways • Plants and vegetation establishment • Laying of pathways and driveways	• Observation • Oral questioning • Written tests • Projects • practical assessments
11. Perform building maintenance operations	• Principles of maintenance operations • Building maintenance procedures • Building faults/defects •	• Observation • Oral questioning • Written tests • Projects practical assessments

Suggested Methods of Instruction

- Demonstration by trainer
- Practical work by trainee
- Demonstration videos
- Projects
- Group discussions

Recommended Resources

Tools and equipment

- Excavating tools and equipment
- Profile boards
- Wheelbarrows
- Trowels
- Spirit levels
- Mason squares
- Steel floats
- Motor boards
- Plumb bob
- Steel bending and fixing tools/machines
- Concrete mixers

- Spades
- Sprayer
- Painting brushes
- Levelling equipment

Materials and supplies

- Cement
- Water
- Sand
- Ballast
- Reinforcement bars
- Paint
- Tiles
- Terrazzo
- Sheets
- Timber
- Steel
- Damp proofing materials
- Stones
- Bricks
- Murram
- Manufactured boards
- Glass
- Plastic

Personal protective equipment (PPEs)

- Dust coat
- Overall
- Helmet
- Safety boots
- Gloves
- First aid kit
- Goggles
- Dust masks