

BUILDING TECHNOLOGY

UNIT CODE: CON/CU/ARC/CC/04/5/A

Relationship to Occupational Standards

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

Duration of Unit: 120 hours

Unit Description

This unit describes the competencies required to conduct site investigations, identify building elements, draw substructure, draw superstructure, prepare reinforced concrete, apply building finishes and fittings, draw architectural landscape and apply alternative building technologies.

Summary of Learning Outcomes

1. Conduct site investigations
2. Identify building elements
3. Draw substructure
4. Draw superstructure
5. Prepare reinforced concrete
6. Apply building finishes and fittings
7. Draw architectural landscape
8. Apply alternative building technologies

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Conduct site investigations	<ul style="list-style-type: none">• Significance of site investigation• Site investigation elements/areas<ul style="list-style-type: none">• Site boundaries• Soil• Existing structures/services• Labour and construction materials• Site investigation procedure• Interpretation of contour maps• Survey equipment and tools• Occupational health and safety precautions	<ul style="list-style-type: none">• Observation• Oral questioning• Written tests• Projects• practical Tests

	<ul style="list-style-type: none"> • Hoarding erection • Site clearance <ul style="list-style-type: none"> • Methods of site clearance • Tools and equipment used in site clearance • Safety issues in site clearance • Setting out of building • Excavation procedures 	
2. Identify building elements	<ul style="list-style-type: none"> • Production of precast concrete • Timber components • Metal components • Stabilized soil components 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Projects • practical Tests
3. Draw substructure	<ul style="list-style-type: none"> • Methods used in levelling <ul style="list-style-type: none"> • Cut • Fill • Cut and fill • Profile boards • Types of profile boards <ul style="list-style-type: none"> • Corner profile boards • Single profile boards • Use of profile boards • Foundations <ul style="list-style-type: none"> • Types of foundations • Materials used in construction of foundations • Hard core <ul style="list-style-type: none"> • Functions of hard core • Materials used • Characteristics of hard core material • Blinding <ul style="list-style-type: none"> • Functions of blinding • Materials used • Characteristics of blinding materials • Anti-termite treatment 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Projects • Practical tests

	<ul style="list-style-type: none"> • Significance of anti-termite treatment • Chemicals used for anti-termite treatment • Safety precautions in chemical handling • Damp proofing <ul style="list-style-type: none"> • Significance of damp proofing • Materials used in damp proofing • Characteristics of damp proofing materials • Concrete bed construction <ul style="list-style-type: none"> • Mass concrete • Reinforced concrete 	
<p>4. Draw superstructure</p>	<ul style="list-style-type: none"> • Setting out superstructure works • Superstructure concrete works <ul style="list-style-type: none"> • Concrete in columns • Concrete in suspended slabs and beams • Formwork • Reinforcement • Curing of concrete • Superstructure walling <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Functional requirements of roofs • Materials used in roof construction • Types of roofs • Parts of a roof 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Projects • practical Tests

	<ul style="list-style-type: none"> • Roof construction procedure • Roof cover <ul style="list-style-type: none"> • Types of roof cover materials <ul style="list-style-type: none"> ▪ Traditional roof cover ▪ Modern roof cover • Functional requirements of roof covers • Roof underlays • Roof cover laying procedure <ul style="list-style-type: none"> ▪ Tiles ▪ Concrete ▪ Sheets • Rain water goods installation <ul style="list-style-type: none"> • Gutter • Downpipes • Channels 	
5. Prepare reinforced concrete	<ul style="list-style-type: none"> • Preparation of Formwork • Steel fixing • Concreting procedures 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Practical Tests
6. Apply building finishes and fittings	<ul style="list-style-type: none"> • Types of building finishes • Types of building fittings • Methods of finishes application 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Projects • practical Tests
7. Draw architectural landscape	<ul style="list-style-type: none"> • Ground preparations • Setting out of pathways and driveways • Plants and vegetation establishment • Laying of pathways and driveways 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Projects • practical Tests
8. Apply alternative building technology	<ul style="list-style-type: none"> • Types of alternative building technologies <ul style="list-style-type: none"> • EPS (expanded polystyrene systems) • Interlocking blocks 	<ul style="list-style-type: none"> • Observation • Oral questioning • Written tests • Projects • practical Tests

	<ul style="list-style-type: none"> • Prefabricated wall panels • Metal panels • Timber panels • Plastics • Glass panels • Traditional construction materials. 	
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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

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