****

**REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**SCAFFOLDING TECHNOLOGY**

**LEVEL 6**

|  |  |
| --- | --- |
| TVET CDACCP.O. BOX 15745-00100NAIROBI | KABETE NATIONAL POLYTECHNICP.O BOX 29010-00625NAIROBI |

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted in the formulation of the Policy Framework for Reforming Education and Training. A key feature of this policy is the radical change in the design and delivery of TVET training. This policy document requires that training in TVET be competency based, Curriculum development be industry led, certification be based on demonstration of competence and the mode of delivery allows for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in Curriculum development to ensure the Curriculum addresses its competence needs. It is against this background that this Curriculum has been developed.

It is my conviction that this Curriculum will play a great role towards safety of workers in the Construction Sector and development of competent human resource.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

Kenya Vision 2030 aims to transform the country into a newly industrializing, “middle-income country providing a high-quality life to all its citizens by the year 2030”. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 on Reforming Education and Training in Kenya, emphasized the need to reform Curriculum development, assessment and certification. This called for a shift to CBET in order to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Construction Sector Skills Advisory Committee (SSAC), Kabete National Polytechnic in partnership with National Construction Authority, Kenya Federation of Master Builders (KFMB) and Chamber of Skilled Craft Frankfurt Rhein Main (Germany) through the Kenya Initiative for Vocational Education and Training (KeVET) project have developed this Curriculum.

This Curriculum has been developed following the CBET framework policy; the CBETA Standards and guidelines provided by the TVET Authority and the Kenya National Qualification framework designed by the Kenya National Qualification Authority.

This Curriculum is designed and organized with an outline of learning outcomes; Suggested Methods of Instructions, training/learning resources and methods of assessing the trainee’s achievement. The Curriculum is competency-based and allows multiple entry and exit to the course.

I am grateful to the Council Members, Council Secretariat, Construction SSAC, Kabete National Polytechnic, National Construction Authority, Kenya Federation of Master Builders, Chamber of Skilled Craft Frankfurt Rhein Main, expert workers and all those who participated in the development of this Curriculum.

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

This Curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the Curriculum, significant involvement and support was received from various organisations.

I appreciate Kabete National Polytechnic, National Construction Authority, Kenya Federation of Master Builders, Chamber of Skilled Craft Frankfurt Rhein Main for the collaboration and partnership that enabled the development of this Curriculum. I also recognize with appreciation the role of the Construction Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in the Curriculum. I also thank all stakeholders in the Construction sector for their valuable input and all those who participated in the process of developing this Curriculum.

I am convinced that this Curriculum will go a long way in ensuring safety for workers in the construction sector and promote acquisition of competencies that will enable them to perform their work more efficiently.

**COUNCIL SECRETARY/CEO**

**TVET CDACC**

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# ABBREVIATIONS AND ACRONYMS

BC Basic Competency

CBET Competency Based Education and Training

CC Common competency

CDACC Curriculum Development, Assessment and Certification Council

CR Core Competency

CU Curriculum

KCSE Kenya Certificate of Secondary Education

KNQA Kenya National Qualifications Authority

PPE Personal Protective Equipment

SSAC Sector Skills Advisory Committee

ST Scaffolding Technology

TVET Technical and Vocational Education and Training

# KEY TO UNIT CODE

 **CON /CU/ST/BC/01/ 6/A**

Industry or sector

Curriculum

Occupational area

Type of competency

Competency number

Competency level

Version

# COURSE OVERVIEW

Scaffolding Technician Level 6 qualification consists of competencies that an individual must achieve to enable him/her to be a scaffolding technician which involves designing basic scaffolding systems, estimating and costing scaffolding works, managing safety compliance, sourcing scaffolding contracts and implement scaffolding works. It also entails managing scaffolding site and firm as well as performing scaffolding trade project.

The units of learning for scaffolding technicians include the following:

**Basic Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit Factor** |
| CON/CU/ST/BC/01/6/A | Communication skills | 40 | 4.0 |
| CON/CU/ST/BC/02/6/A | Digital literacy | 60 | 6.0 |
| CON/CU/ST/BC/03/6/A | Entrepreneurial skills | 100 | 10.0 |
| CON/CU/ST/BC/04/6/A | Employability skills | 80 | 8.0 |
| CON/CU/ST/BC/05/6/A | Environmental literacy | 40 | 4.0 |
| CON/CU/ST/BC/06/6/A | Occupational safety and health practices | 40 | 4.0 |
| **Total** | **360** | **36.0** |

**Common Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit Factor** |
| CON/CU/ST/CC/01/6/A | Technical drawing | **120** | **12.0** |
| CON/CU/ST/CC/02/6/A | Engineering mathematics | **150** | **15.0** |
| CON/CU/ST/CC/03/6/A | Application of scientific principles | **75** | **7.5** |
| CON/CU/ST/CC/04/6/A | Workshop Processes  | **75** | **7.5** |
| **Total** | **420** | **42.0** |

**Core Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit factor** |
| CON/CU/ST/CR/01/6/A | Basic Scaffolding systems | 300 | 30.0 |
| CON/CU/ST/CR/02/6/A | Estimation and costing  | 100 | 10.0 |
| CON/CU/ST/CR/03/6/A | Safety Compliance | 80 | 8.0 |
| CON/CU/ST/CR/04/6/A | Scaffolding Contracts | 100 | 10.0 |
| CON/CU/ST/CR/05/6/A | Implementation of scaffolding works | 300 | 30.0 |
| CON/CU/ST/CR/06/6/A | Site Mnagement | 120 | 12.0 |
| CON/CU/ST/CR/07/6/A | Firm management | 80 | 8.0 |
| CON/CU/ST/CR/08/6/A | Trade project | 420 | 42.0 |
|  | Industrial attachment  | 480 | 48.0 |
| **Total** | **1980** | **198.0** |
| **GRAND TOTAL**  | **2760** | **276.0** |

The total duration of the course is 2,760 hours.

**Entry Requirements**

An individual entering this course should have any of the following minimum requirements:

1. Kenya Certificate of Secondary Education (KCSE) mean grade C- (minus)

**Or**

1. Certificate in Scaffolding Technology Level 5

**Or**

1. Any other qualifications as determined by Kenya National Qualifications Authority (KNQA)

**Trainer qualification**

A trainer for this course should have a higher qualification than the level of this course

To be retained the way it is

**Field attachment**

An individual enrolled in this course will undergo a field attachment for a period of 480 hours in a construction site with scaffolding works.

**Assessment**

The course will be assessed at two levels:

1. **Internal assessment**: conducted continuously by the trainer (internal assessor) who is monitored by an accredited internal verifier.
2. **External assessment:** conducted by an accredited external assessor who is monitored by an accredited external verifier.

The assessors and verifiers are registered by TVET CDACC which also coordinates external assessment.

**Certification**

An individual will be awarded a Certificate of Competency on demonstration of competence in a unit of competency. To be awarded Certificate in Scaffolding Technology Level 6, an individual must demonstrate competence in all the units of competency in the qualification pack.

These certificates will be awarded by TVET CDACC in conjunction with Kabete National Polytechnic.

# BASIC UNITS OF LEARNING

## COMMUNICATION SKILLS

**UNIT CODE:** CON/CU/ST/BC/01/6/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Communication Skills

**Duration of Unit:** 40 hours

**Unit Description**

This unit covers the competencies required to demonstrate communication skills .It involves, meeting communication needs of clients and colleagues; developing communication strategies, establishing and maintaining communication pathways, conducting interviews, facilitating group discussion and representing the organization.

**Summary of Learning Outcomes**

1. Meet communication needs of clients and colleagues
2. Develop communication strategies
3. Establish and maintain communication pathways
4. Promote use of communication strategies
5. Conduct interview
6. Facilitate group discussion
7. Represent the organization

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Meet communication needs of clients and colleagues
 | * Communication process
* Modes of communication
* Medium of communication
* Effective communication
* Barriers to communication
* Flow of communication
* Sources of information
* Organizational policies
* Organization requirements for written and electronic communication methods
* Report writing
* Effective questioning techniques (clarifying and probing)
* Workplace etiquette
* Ethical work practices in handling communication
* Active listening
* Feedback
* Interpretation
* Flexibility in communication
* Types of communication strategies
* Elements of communication strategy
 | * Interview
* Written texts
 |
| 1. Develop communication strategies
 | * Dynamics of groups
* Styles of group leadership
* Openness and flexibility in communication
* Communication skills relevant to client groups
 | * Interview
* Written texts
 |
| 1. Establish and maintain communication pathways
 | * Types of communication pathways
 | * Interview
* Written texts
 |
| 1. Promote use of communication strategies
 | * Application of elements of communication strategies
* Effective communication techniques
 | * Interview
* Written texts
 |
| 1. Conduct interview
 | * Types of interview
* Establishing rapport
* Facilitating resolution of issues
* Developing action plans
 | * Interview
* Written texts
 |
| 1. Facilitate group discussion
 | * Identification of communication needs
* Dynamics of groups
* Styles of group leadership
* Presentation of information
* Encouraging group members participation
* Evaluating group communication strategies
 | * Interview
* Written texts
 |
| 1. Represent the organization
 | * Presentation techniques
* Development of a presentation
* Multi-media utilization in presentation
* Communication skills relevant to client groups
 | * Interview
* Written texts
 |

**Suggested Methods of Instruction**

* Discussion
* Role playing
* Simulation
* Direct instruction

**Recommended Resources**

* Desktop computers/laptops
* Internet connection
* Projectors
* Telephone

## DIGITAL LITERACY

**UNIT CODE:** CON/CU/ST/BC/02/6/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

**Duration of Unit:** 60 hours

**Unit Description**

This unit describes competencies required to demonstrate digital literacy. It involves in identifying computer software and hardware, applying security measures to data, hardware, software in automated environment, computer software in solving task, internet and email in communication at workplace, desktop publishing in official assignments and preparing presentation packages.

**Summary of Learning Outcomes**

1. Identify computer software and hardware
2. Apply security measures to data, hardware, software in automated environment
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace
5. Apply desktop publishing in official assignments
6. Prepare presentation packages

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify computer hardware and software
 | * Concepts of ICT
* Functions of ICT
* History of computers
* Components of a computer
* Classification of computers
 | * Written tests
* Oral presentation
 |
| 1. Apply security measures to data, hardware, software in automated environment
 | * Data security and control
* Security threats and control measures
* Types of computer crimes
* Detection and protection against computer crimes
* Laws governing protection of ICT
 | * Written tests
* Oral presentation
* Project
 |
| 1. Apply computer software in solving tasks
 | * Operating system
* Word processing
* Spread sheets
* Data base design and manipulation
* Data manipulation, storage and retrieval
 | * Oral questioning
* Project
 |
| 1. Apply internet and email in communication at workplace
 | * Computer networks
* Network configurations
* Uses of internet
* Electronic mail (e-mail) concept
 | * Oral questioning
* Written report
 |
| 1. Apply desktop publishing in official assignments
 | * Concept of desktop publishing
* Opening publication window
* Identifying different tools and tool bars
* Determining page layout
* Opening, saving and closing files
* Drawing various shapes using DTP
* Using colour pellets to enhance a document
* Inserting text frames
* Importing and exporting text
* Object linking and embedding
* Designing of various publications
* Printing of various publications
 | * Oral questioning
* Written report
* Project
 |
| 1. Prepare presentation packages
 | * Types of presentation packages
* Procedure of creating slides
* Formatting slides
* Presentation of slides
* Procedure for editing objects
 | * Oral questioning
* Written report
* Project
 |

**Suggested Methods of Instruction**

* Instructor led facilitation of theory
* Demonstration by trainer
* Practical work by trainee
* Viewing of related videos
* Project
* Group discussions

**Recommended Resources**

* Computers
* Printers
* Storage devices
* Internet access

## ENTREPRENEURIAL SKILLS

**UNIT CODE:** CON/CU/ST/BC/03/6/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

**Duration of unit:** 100 hours

**Unit Description**

This unit covers the competencies required to demonstrate understanding of entrepreneurship. It involves demonstrating understanding of an entrepreneur, entrepreneurship and self-employment. It also involves identifying entrepreneurship opportunities, creating entrepreneurial awareness, applying entrepreneurial motivation and developing business innovative strategies.

**Summary of Learning Outcomes**

* 1. Demonstrate understanding of who an entrepreneur
	2. Demonstrate knowledge of entrepreneurship and self-employment
	3. Identify entrepreneurship opportunities
	4. Create entrepreneurial awareness
	5. Apply entrepreneurial motivation
	6. Develop business innovative strategies
	7. Develop Business plan

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Demonstrate knowledge of entrepreneurship and self-employment
 | * Importance of self-employment
* Requirements for entry into self-employment
* Role of an Entrepreneur in business
* Contributions of Entrepreneurs to National development
* Entrepreneurship culture in Kenya
* Born or made entrepreneurs
 | * Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
 |
| 1. Identify entrepreneurship opportunities
 | * Business ideas and opportunities
* Sources of business ideas
* Business life cycle
* Legal aspects of business
* Assessment of product demand
* Business environment
* Factors to consider when evaluating business environment
* Technology in business
 | * Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Create entrepreneurial awareness
 | * Forms of businesses
* Sources of business finance
* Factors in selecting source of business finance
* Governing policies on Small Scale Enterprises (SSEs)
* Problems of starting and operating SSEs
 | * Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Apply entrepreneurial motivation
 | * Internal and external motivation
* Motivational theories
* Self-assessment
* Entrepreneurial orientation
* Effective communications in entrepreneurship
* Principles of communication
* Entrepreneurial motivation
 | * Case studies
* Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Develop business innovative strategies
 | * Innovation in business
* Small business Strategic Plan
* Creativity in business development
* Linkages with other entrepreneurs
* ICT in business growth and development
 | * Case studies
* Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Develop Business Plan
 | * Business description
* Marketing plan
* Organizational/Management
* plan
* Production/operation plan
* Financial plan
* Executive summary
* Presentation of Business Plan
 | * Case studies
* Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |

**Suggested Methods of Instruction**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration
* Question and answer
* Problem solving
* Experiential
* Team training

**Recommended Resources**

* Case studies
* Business plan templates
* Computers
* Overhead projectors
* Internet
* Mobile phone
* Video clips
* Films
* Newspapers and Handouts
* Business Journals
* Writing materials

## EMPLOYABILITY SKILLS

**UNIT CODE:** CON/CU/ST/BC/04/6/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Employability Skills

**Duration of Unit:** 80 hours

**Unit Description**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating interpersonal communication, critical safe work habits, leading a workplace team, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and managing ethical performance.

**Summary of Learning Outcomes**

1. Conduct self-management
2. Demonstrate interpersonal communication
3. Demonstrate critical safe work habits
4. Lead a workplace team
5. Plan and organize work
6. Maintain professional growth and development
7. Demonstrate workplace learning
8. Demonstrate problem solving skills
9. Manage ethical performance

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Conduct self-management
 | * Self-awareness
* Formulating personal vision, mission and goals
* Strategies for overcoming life challenges
* Managing emotions
* Emotional intelligence
* Assertiveness versus aggressiveness
* Expressing personal thoughts, feelings and beliefs
* Developing and maintaining high self-esteem
* Developing and maintaining positive self-image
* Setting performance targets
* Monitoring and evaluating performance
* Articulating ideas and aspirations
* Accountability and responsibility
* Good work habits
* Self-awareness
* Values and beliefs
* Self-development
* Financial literacy
* Healthy lifestyle practices
* Adopting safety practices
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate interpersonal communication
 | * Meaning of interpersonal communication
* Listening skills
* Types of audience
* Public speaking
* Writing skills
* Negotiation skills
* Reading skills
* Meaning of empathy
* Understanding customers’ needs
* Establishing communication networks
* Assertiveness
* Sharing information
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate critical safe work habits
 | * Stress and stress management
* Time concept
* Punctuality and time consciousness
* Leisure
* Integratingpersonal objectives into organizational objectives
* Resources mobilization
* Resources utilization
* Setting work priorities
* Developing healthy relationships
* HIV and AIDS
* Drug and substance abuse
* Managing emerging issues
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Lead a workplace team
 | * Leadership qualities
* Power and authority
* Team building
* Determination of team roles and objectives
* Team parameters and relationships
* Individual responsibilities in a team
* Forms of communication
* Complementing team activities
* Gender and gender mainstreaming
* Human rights
* Developing healthy relationships
* Maintaining relationships
* Conflicts and conflict resolution
* Coaching and mentoring skills
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Plan and organize work
 | * Functions of management
* Planning
* Organizing
* Time management
* Decision making concept
* Task allocation
* Developing work plans
* Developing work goals/objectives and deliverables
* Monitoring work activities
* Evaluating work activities
* Resource mobilization
* Resource allocation
* Resource utilization
* Proactive planning
* Risk evaluation
* Problem solving
* Collecting, analysing and organising information
* Negotiation
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Maintain professional growth and development
 | * Avenues for professional growth
* Training and career opportunities
* Assessing training needs
* Mobilizing training resources
* Licenses and certifications for professional growth and development
* Pursuing personal and organizational goals
* Managing work priorities and commitments
* Recognizing career advancement
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate workplace learning
 | * Managing own learning
* Mentoring
* Coaching
* Contributing to the learning community at the workplace
* Cultural aspects of work
* Networking
* Variety of learning context
* Application of learning
* Safe use of technology
* Taking initiative/proactivity
* Flexibility
* Identifying opportunities
* Generating new ideas
* Workplace innovation
* Performance improvement
* Managing emerging issues
* Future trends and concerns in learning
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate problem solving skills
 | * Critical thinking process
* Data analysis tools
* Decision making
* Creative thinking
* Development of creative, innovative and practical solutions
* Independence in identifying and solving problems
* Solving problems in teams
* Application of problem-solving strategies
* Testing assumptions
* Resolving customer concerns
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |
| 1. Manage ethical performance
 | * Meaning of ethics
* Ethical perspectives
* Principles of ethics
* Ethical standards
* Organization code of ethics
* Common ethical dilemmas
* Organization culture
* Corruption, bribery and conflict of interest
* Privacy and data protection
* Diversity, harassment and mutual respect
* Financial responsibility/accountability
* Etiquette
* Personal and professional integrity
* Commitment to jurisdictional laws
* Emerging issues in ethics
 | * Written tests
* Oral questioning
* Interviewing
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of Instruction**

* Demonstrations
* Simulation/Role play
* Group Discussion
* Presentations
* Assignments
* Q&A

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* Radio sets
* TV sets
* LCD projectors

## ENVIRONMENTAL LITERACY

**UNIT CODE**:CON/CU/ST/BC/05/6/A

**Relationship to Occupational Standards**:

This unit addresses the Unit of Competency : Demonstrate Environmental Literacy

**Duration of Unit:** 40 hours

**Unit Description**

This unit describes the competencies required demonstrate environmental literacy.it involves controlling environmental hazard, controlling environmental pollution, complying with workplace sustainable resource use, evaluating current practices in relation to resource usage, identifying environmental legislations/conventions for environmental concerns, implementing specific environmental programs, monitoring activities on environmental protection/programs, analysing resource use and developing resource conservation plans.

**Summary of Learning Outcomes**

1. Control environmental hazard
2. Control environmental Pollution
3. Demonstrate sustainable resource use
4. Evaluate current practices in relation to resource usage
5. Identify Environmental legislations/conventions for environmental concerns
6. Implement specific environmental programs
7. Monitor activities on Environmental protection/Programs
8. Analyze resource use
9. Develop resource conservation plans

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** |  **Content** | **Suggested Assessment Methods** |
| 1. Control environmental hazard
 | * Purposes and content of Environmental Management and Coordination Act 1999
* Storage methods for environmentally hazardous materials
* Disposal methods of hazardous wastes
* Types and uses of PPE in line with environmental regulations
* Occupational Safety and Health Standards (OSHS)
 | * Written questions
* Oral questions
 |
| 1. Control environmental Pollution control
 | * Types of pollution
* Environmental pollution control measures
* Types of solid wastes
* Procedures for solid waste management
* Different types of noise pollution
* Methods for minimizing noise pollution
 | * Written questions
* Oral questions
* Role play
 |
| 1. Demonstrate sustainable resource use
 | * Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Methods for minimizing wastage
* Waste management procedures
* Principles of 3Rs (Reduce, Reuse, Recycle)
* Methods for economizing or reducing resource consumption
 | * Written questions
* Oral questions
* Role play
 |
| 1. Evaluate current practices in relation to resource usage
 | * Collection of information on environmental and resource efficiency systems and procedures,
* Measurement and recording of current resource usage
* Analysis and recording of current purchasing strategies.
* Analysis of current work processes to access information and data
* Identification of areas for improvement
 | * Written questions
* Oral questions
* Role play
 |
| 1. Identify Environmental legislations/conventions for environmental concerns
 | * Environmental issues/concerns
* Environmental legislations /conventions and local ordinances
* Industrial standard /environmental practices
* International Environmental Protocols (Montreal, Kyoto)
* Features of an environmental strategy
 | * Written questions
* Oral questions
 |
| 1. Implement specific environmental programs
 | * Community needs and expectations
* Resource availability
* 5s of good housekeeping
* Identification of programs/Activities
* Setting of individual roles /responsibilities
* Resolving problems /constraints encountered
* Consultation with stakeholders
 | * Written questions
* Oral questions
* Role play
 |
| 1. Monitor activities on Environmental protection/Programs
 | * Periodic monitoring and Evaluation of activities
* Gathering feedback from stakeholders
* Analyzing data gathered
* Documentation of recommendations and submission
* Setting of management support systems to sustain and enhance the program
* Monitoring and reporting of environmental incidents to concerned /proper authorities
 | * Oral questions
* Written tests
* Practical test
 |
| 1. Analyze resource use
 | * Identification of resource consuming processes
* Determination of quantity and nature of resource consumed
* Analysis of resource flow through different parts of the process.
* Classification of wastes for possible source of resources.
 | * Written tests
* Oral questions
* Practical test
 |
| 1. Develop resource Conservation plans
 | * Determination of efficiency of use/conversion of resources
* Causes of low efficiency of use of resources
* Plans for increasing the efficiency of resource use
 | * Written tests
* Oral questions
* Practical test
 |

**Suggested Methods of Instruction**

* Instructor led facilitation of theory
* Practical demonstration of tasks by trainer
* Practice by trainees
* Observations and comments and corrections by trainers

**Recommended Resources**

* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Environmental Management and Coordination Act 1999
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE)
* ISO standards
* Company environmental management systems (EMS)
* Montreal Protocol
* Kyoto Protocol

## OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** CON/CU/ST/BC/06/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Demonstrate Occupational Safety and Health Practices

**Duration of Unit:** 40 hours

**Unit Description**

This unit specifies the competencies required to demonstrate occupational health and safety practices. It involves identifying workplace hazards and risk, identifying and implementing appropriate control measures to hazards and risks and implementing OSH programs, procedures and policies/guidelines.

**Summary of Learning Outcomes**

1. Identify workplace hazards and risk
2. Control OSH hazards
3. Implement OSH programs

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify workplace hazards and risks
 | * Identification of hazards in the workplace and/or the indicators of their presence
* Evaluation and/or work environment measurements of OSH hazards/risk existing in the workplace
* Gathering of OSH issues and/or concerns
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |
| 1. Control OSH hazards
 | * Prevention and control measures e.g. use of PPE
* Risk assessment
* Contingency measures
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |
| 1. Implement OSH

 programs | * Company OSH program, evaluation and review
* Implementation of OSH programs
* Training of team members and advice on OSH standards and procedures
* Implementation of procedures for maintaining OSH-related records
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of instruction**

* Assigments
* Discussion
* Q&A
* Role play
* Viewing of related videos

**Recommended Resources**

* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE) e.g.
* Mask
* Face mask/shield
* Safety boots
* Safety harness
* Arm/Hand guard, gloves
* Eye protection (goggles, shield)
* Hearing protection (ear muffs, ear plugs)
* Hair Net/cap/bonnet
* Hard hat
* Face protection (mask, shield)
* Apron/Gown/coverall/jump suit
* Anti-static suits
* High-visibility reflective vest

# COMMON UNITS OF LEARNING

## TECHNICAL DRAWING

**UNIT CODE:** CON/CU/ST/CC/01/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply technical drawing skills

**Duration of Unit:** 120 hours

**Unit Description**

This unit covers the competencies required to technical drawing skills. It involves competencies for selecting, using and maintaining drawing equipment and materials. It also involves producing plane geometry drawings, solid geometry drawings, pictorial and orthographic drawings of components, assembly drawings and application of Computer Aided Design packages.

**Summary of Learning Outcomes**

1. Use and maintain drawing equipment and materials
2. Produce plane geometry drawings
3. Produce solid geometry drawings
4. Produce pictorial and orthographic drawings of components
5. Produce Assembly Drawings
6. Apply CAD packages

**Learning Outcomes, Content and Suggested Assessment Methods:**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Use and maintain drawing equipment and materials
 | * Identification and care of drawing equipment
* Identification and care of drawing materials
* Reference to manufacturer’s instructions and work place procedures on use and maintenance of drawing equipment and materials
* Reference to relevant environmental legislations
* Use of Personal Protective Equipment (PPEs)
 | * Observation
* Oral questioning
* Written tests
* Interview
 |
| 1. Produce plane geometry drawings
 | * Types of lines in drawings
* Construction of geometric forms e.g. squares, circles
* Construction of different angles
* Measurement of different angles
* Bisection of different angles and lines
* Standard drawing conventions
 | * Oral questioning
* Practical tests
* Observation
* Written tests
* Interview
 |
| 1. Produce solid geometry drawings
 | * Interpretation of sketches and drawings of patterns e.g. cylinders, prisms and pyramids
* Sectioning of solids e.g. prisms, cones
* Development and interpenetrations of solids e.g. cylinder to cylinder and cylinder to triangular, prism
 | * Observation
* Practical tests
* Oral questioning
* Written tests
* Interview
 |
| 1. Produce pictorial and orthographic drawings of components
 | * Meaning of pictorial drawings
* Drawing objects in isometric view
* Drawing objects in oblique view Meaning of pictorial and orthographic drawings
* Meaning of sectioning
* Meaning of symbols and abbreviations
* Drawing and interpretation of orthographic elevations
* Dimensioning of orthographic elevations
* Sectioning of views
 | * Observation
* Oral Questioning
* Practical tests
* Written tests
* Interview
* Oral questioning
 |
| 1. Produce assembly drawings
 | * Terms and concepts
* Meaning of assembly drawings
* Parts list
* Assembling of parts
 | * Observation
* Oral questioning
* Written tests
* Interview
* Practical tests
 |
| 1. Apply CAD packages
 | * Identification of CAD packages e.g. AutoCAD, ArchiCAD
* Use of CAD packages in drawing of:
* Plane geometry
* Solid
* Orthographic
* Pictorial
 | * Observation
* Oral questioning
* Written tests
* Interview
* Practical tests
 |

**Suggested Methods of Instruction**

* Projects
* Demonstration
* Discussions
* Assignments
* Interactive lectures
* Direct instruction

**Recommended Resources**

* Drawing room
* Drawing instruments e.g. T-squares, set squares, drawing sets
* Drawing tables
* Pencils, papers, erasers
* Masking tapes
* Computers installed with relevant CAD packages

## ENGINEERING MATHEMATICS

**UNIT CODE:** CON/CU/ST/CC/02/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply engineering mathematics

**Duration of Unit:** 150 hours

**Unit Description**

This unit describes the competencies required to apply engineering mathematics. It involves applying: algebra, trigonometry and hyperbolic functions, complex numbers, co-ordinate geometry and carry out binomial expansion. It also entails calculus, solving ordinary differential equations, carry out mensuration, power series, statistics, numerical methods, vector theory and matrices.

**Summary of Learning Outcomes**

1. Apply Algebra
2. Apply Trigonometry and hyperbolic functions
3. Apply complex numbers
4. Apply Coordinate Geometry
5. Carry out Binomial Expansion
6. Apply Calculus
7. Solve Ordinary differential equations
8. Carry out Mensuration
9. Apply Power Series
10. Apply Statistics
11. Apply Numerical methods
12. Apply Vector theory
13. Apply Matrix

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| * + 1. Apply Algebra
 | * Base and Index
* Law of indices
* Indicial equations
* Laws of logarithm
* Logarithmic equations
* Conversion of bases
* Use of calculator
* Reduction of equations
* Solution of equations reduced to quadratic form
* Solutions of simultaneous linear equations in three unknowns
* Solutions of problems involving AP and GP
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Apply Trigonometry and hyperbolic functions
 | * Half -angle formula
* Factor formula
* Trigonometric functions
* Parametric equations
* Relative and absolute measures
* Measures calculation
* Definition of hyperbolic equations
* Properties of hyperbolic functions
* Evaluations of hyperbolic functions Hyperbolic identities
* Osborne’s Rule
* Ashx+bshx=C equation
* One-to-one relationship in functions
* Inverse functions for one-to-one relationship
* Inverse functions for trigonometric functions
* Graph of inverse functions
* Inverse hyperbolic functions
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Apply complex numbers
 | * Definition of complex numbers
* Stating complex numbers in numbers in terms of conjugate argument and
* Modulus
* Representation of complex numbers on the Argand diagram
* Arithmetic operation of complex numbers Application of De Moivre’s theorem
* Application of complex numbers to engineering
 | * Assignments
* Oral questioning
* Supervised exercises
* Written tests
 |
| * + 1. Apply Coordinate Geometry
 | * Polar equations
* Cartesian equation
* Graphs of polar equations
* Normal and tangents
* Definition of a point
* Locus of a point in relation to a circle
* Loci of points for given mechanism
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Carry out Binomial Expansion
 | * Binomial theorem Power series using binomial theorem Roots of numbers using binomial theorem.
* Estimation of errors of small changes using binomial theorem.
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Apply Calculus
 | * Definition of derivatives of a function
* Differentiation from fist principle
* Tables of some common derivatives
* Rules of differentiation
* Rate of change and small change
* Stationery points of functions of two variables
* Definition of integration
* Indefinite and definite integral
* Methods of integration application of integration.
* Integrals of hyperbolic and inverse functions
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Solve Ordinary differential equations
 | * Types of first order differential equations
* Formation of first order differential equation
* Solution of first order differential equations
* Application of first order differential equations
* Formation of second order differential equations for various systems
* Solution of second order differential equations
* Application of second order differential equations
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Carry out Mensuration
 | * Units of measurements
* Perimeter and areas of regular figures
* Volume of regular solids
* Surface area of regular solids
* Area of irregular figures
* Areas and volumes using Pappus theorem
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Apply Power Series
 | * Definition of the term power series
* Taylor’s theorem
* Deduction of McLaurin’s theorem to obtain power series
* Application of Taylor’s theorem and McLaurin’s theorems in numerical work
 | * Written tests
* Oral questioning
* Assignments
* Supervised exercises
 |
| * + 1. Apply Statistics
 | * Measures of central tendency mean, mode and median
* Measures of dispersion
	+ Variance and standard deviation
* Definition of probability
* Laws of probability
* Expectation variance and S.D.
* Types of distributions
* Mean, variance and SD of probability distributions
* Application of probability distributions
 | * Assignments
* Oral questioning
* Supervised exercises
* Written tests
* Simulation
* Data modelling
 |
| * + 1. Apply Numerical methods
 | * Definition of interpolation and extrapolation
* Application of interpolation
* Application of interactive methods to solve equations
* Application of interactive methods to areas and volumes
 | * Assignments
* Oral questioning
* Supervised exercises
* Written tests
 |
| * + 1. Apply Vector theory
 | * Vectors and scalar in two and three dimensions
* Operations on vectors: Addition and Subtraction
* Position vectors
* Resolution of vectors
 | * Assignments
* Oral questioning
* Supervised exercises
* Written tests
 |
| * + 1. Apply Matrix methods
 | * Matrix operation
* Determinant of 3x3 matrix
* Inverse of 3x3 matrix
* Solution of linear simultaneous equations in 3 unknown
* Application of matrices
 | * Assignments
* Oral questioning
* Supervised exercises
* Written tests
 |

**Suggested Methods of Instructions**

* Group discussions
* Demonstration by trainer
* Exercises by trainee

**Recommended Resources**

* Scientific Calculators
* Rulers, pencils, erasers
* Charts with presentations of data
* Graph books
* Dice
* Computers with internet connection

## APPLICATION OF SCIENTIFIC PRINCIPLES

**UNIT CODE:** CON/CU/ST/CC/03/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply scientific principles

**Duration of Unit:** 75 Hours

**Unit Description**

This unit describes the competencies required to apply scientific principles in scaffolding. It involves using concepts of science, resolution of forces, determining effects of various loads on scaffolding systems and analysing properties of materials.

**Summary of Learning Outcomes**

1. Apply science concepts
2. Resolve forces
3. Determine effects of loads in scaffolding systems.
4. Analyse properties of materials

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Apply science concepts
 | * Terms and concepts
* Units of measurement
* Standard International Units
* density and pressure
* work , power and energy
* moments
* motion
 | * Written tests
* Interview
 |
| 1. Resolve forces
 | * Terms and concepts
* Force
* Theorems
* Resolution of forces
 | * Written tests
* Interview
 |
| 1. Determine effects of loads in scaffolding systems
 | * Terms and concepts
* Basic measurements
* Systems of scaffold
* Loading
 | * Written tests
* Interview
 |
| 1. Analyse properties of materials
 | * Terms and concepts
* Physical properties of materials
* Mechanical properties of materials
* Chemical properties of materials
 | * Written tests
* Interview
 |

**Suggested Methods of Instructions**

* Demonstration
* Field trips
* Discussions
* Question and answer

**Recommended Resources**

**Tools and equipment**

* Computer
* Laboratory testing equipment
* Charts

**Materials and supplies**

* Computer software
* Construction materials
* Computers
* Stationery
* Manufacturer’s catalogues

**Personal protective equipment (PPEs)**

* Safety boots
* Goggles
* Gas masks
* Helmets
* Gloves
* Dust coats
* First aid kit
* Ear muffs
* Dust masks
* Overalls

## WORKSHOP PROCESSES

**UNIT CODE:** CON/CU/ST/CC/04/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Perform Workshop Processes

**Duration of Unit:** 75 Hours

**Unit Description**

This unit covers the competencies required to perform workshop processes. It involves applying workshop safety practices, using of workshop tools and equipment, demonstrating the use of scaffold components and members, preparation for scaffold site materials and supplies. It also entails preparation of scaffold site, storage of scaffold materials and supplies, maintaining scaffold components and tools.

**Summary of Learning Outcomes**

1. Apply workshop safety practices
2. Use workshop tools and equipment
3. Demonstrate use of scaffold components and members
4. Prepare scaffold site materials and supplies
5. Prepare scaffold site
6. Store scaffold materials and supplies
7. Maintain scaffold components and tools.

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Apply workshop safety practices
 | * Terms and concepts
* Personal Protective Equipment
* Scaffolding Tools and equipment
* Workshop rules
* First Aid
 | * Written tests
* Interview
* Observation
* Oral questioning
 |
| 1. Use workshop tools and equipment
 | * Terms and concepts
* workshop tools and equipment
	+ identification
	+ use
	+ care
	+ maintenance
* Calibration of equipment
 | * Written tests
* Interview
* Observation
* Oral questioning
 |
| 1. Demonstrate use of scaffold components and members
 | * Terms and concepts
* Scaffold components and members
	+ identification
	+ use
	+ care
	+ maintenance
 | * Written tests
* Interview
* Observation
* Oral questioning
 |
| 1. Prepare scaffold site materials and
2. supplies
 | * Terms and concepts
* Materials and supplies
	+ identification
	+ use
 | * Written tests
* Interview
* Observation
* Oral questioning
 |
| 1. Prepare scaffold site
 | * Terms and concepts
* Site surveying
* Site is clearance
* Site is levelling
 | * Written tests
* Interview
* Observation
* Oral questioning
 |
| 1. Store scaffold materials and supplies
 | * Terms and concepts
* Types of storage
* Storage systems
* Methods of storage
* Inspection and sorting of scaffolding components and members
* Record keeping
 | * Written tests
* Interview
* Observation
* Oral questioning
 |
| 1. Maintain scaffold components and members
 | * Terms and concepts
* Methods of maintenance
	+ Cleaning
	+ Welding
	+ Oiling
	+ Greasing
	+ Painting
	+ Replacement
 | * Written tests
* Interview
* Observation
* Oral questioning
 |

**Suggested Methods of Instructions**

* Demonstration
* Field trips
* Discussions
* Question and answer

**Recommended Resources**

**Tools and equipment**

* Shovel
* Plumb bob
* Portable power drill
* Pickle
* Spirit level
* Measuring tape
* Hand drill
* Screw drivers
* circular saw
* pliers
* Safety goggles
* Pliers
* Grinder

**Materials and supplies**

* Grease
* Oil

**Personal protective equipment (PPEs)**

* Helmets
* Gloves
* Safety goggles
* Safety boots
* Overalls
* Dust masks
* Gas masks
* Dust coats

# CORE UNITS OF LEARNING

## BASIC SCAFFOLDING SYSTEMS

**UNIT CODE:** CON/CU/ST/CR/01/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Design basic scaffolding systems.

**Duration of Unit:** **300** hours

**UNIT DESCRIPTION**

This unit covers the competencies required to design basic scaffolding system. It involves evaluating scaffolding site, interpreting project working drawings, determining scaffold loading and developing scaffold drawings.

**Summary of Learning Outcomes**

1. Evaluate scaffolding site
2. Interpret project working drawings
3. Determine scaffold loading
4. Develop scaffold drawings

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| Evaluate scaffolding site  | * Terms and concepts
* Bearing capacity of soils
* Nature of surface
* Types of soils
* Risk assessment
* Scaffolds positioning
* Scaffold anchorage
* Preparation of site reconnaissance report
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Interpret project working drawings  | * Types of working drawings
* Use of symbols
* Metric system of measurement
* Imperial system of measurement
* Computer aided design (CAD)
* Basic measurements
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Determine scaffold loading  | * Terms and concepts
* Types of loads
* Types of forces
* Load capacities
* Types of scaffolds
* Loading analysis
* Modelling and simulations
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Develop scaffold drawings | * Use of symbols
* Metric system

of measurement* Imperial system of measurement
* Computer aided design (CAD)
* Basic measurements
* Sketching
* Drawing
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Demonstrations
* Discussion
* Practical
* Project
* Assignments
* Case studies

**Recommended Resources**

* Computers
* Stationery
* Charts/posters/
* Magazines
* Video clips
* LCD projector
* Scaffolding training kits:
* Scaffold members and components
* Materials and supplies
* Tools and equipment
* PPEs

## ESTIMATION AND COSTING

**UNIT CODE:** CON/CU/ST/CR/02/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Estimate and cost scaffolding works

**Duration of Unit:** 100 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to estimate and cost scaffolding works. It involves measuring scaffold area, quantifying scaffold members, quantifying scaffolding resources, building-up scaffold unit rate and developing bills of quantities.

**Summary of Learning Outcomes**

1. Measure scaffold area
2. Quantify scaffold members
3. Quantify scaffolding resources
4. Build-up scaffold unit rate
5. Develop bill of quantities

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Measure scaffold area
 | * Terms and concepts
* Units of measurements
* Measuring tools
* Measurement of scaffold area
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Third party reports
 |
| 1. Quantify scaffold members and components
 | * Terms and concepts
* Scaffold systems
* Scaffold members and components
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Third party reports
 |
| 1. Quantify scaffolding resources
 | * Terms and concepts
* Time management
	+ Loading and transport
	+ Off-loading and storage
	+ Erection and serving
	+ Hoarding and service
	+ Dismantling and storage
	+ Transport back and check in service and storage
* Human resource
* Materials and supplies
* Tools and equipment
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Build-up scaffold unit rate
 | * Terms and concepts
* Interpretation
* Basic measurements
* Estimate and cost
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Develop bill of quantities
 | * Terms and concepts
* Types of costs
* Use and components of a bill of quantity
* Preparation of bill of quantity
* Determination of total cost
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Demonstrations
* Discussion
* Practical assignments
* Project
* Written assignments
* Case studies

**Recommended Resources**

* Computers
* Stationery
* Charts/posters/
* Magazines
* Video clips
* LCD projector
* Internet connectivity
* Scaffolding training kits:
* Scaffold members and components
* Materials and supplies
* Tools and equipment
* PPEs

## SAFETY COMPLIANCE

**UNIT CODE:** CON/CU/ST/CR/03/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Manage safety compliance.

**Duration of Unit:** 80 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to manage safety compliance. It involves developing site safety plans, implementing site safety plans, handling site hazards and incidents. It also entails applying safety codes, rules and regulations and maintaining site safety records.

**Summary of Learning Outcome**

1. Develop site safety plans.
2. Implement site safety plans.
3. Handle site hazards and incidents
4. Apply safety codes, rules and regulations.
5. Maintain site safety records

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Develop site safety plans
 | * Terms and concept
* Personal and general safety
* Safety resources
	+ Safety team
	+ PPEs
	+ Materials and supplies
* Risk assessment
* Accidents and hazards
* Site safety plan
* Emergency procedure
* Mitigation measures
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Implement site safety plans.
 | * Terms and concept
* Legal requirements and regulations
* Safety training and drills
* PPE’s
* Scaffold integrity
* Incident reporting
* Safety compliance checks
* Safety signage
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Handle site hazards and incidents
 | * Terms and concept
* First aid
* Safety incidents
* Safety hazards:
	+ Types of hazards
	+ Causes of hazards
* Safety mitigation measures
* Investigation
* Reporting of safety incidents
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Apply safety codes, rules and regulations
 | * Terms and concepts
* National Construction AuthorityAct No.41 of 2011
* Site rules and regulations
* National Environment Management Authority regulations
* Occupational Safety and Health Act 2007
* WIBA
* Employment act
* Labour relations act
* Public health Act Cap 242 of 2012
* Instructional manuals
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Maintain site safety records
 | * Workers health records
* Site safety inventory
* Site safety reports
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Demonstrations
* Simulation
* Discussion
* Practical
* Project
* Assignments
* Case studies

**Recommended Resources**

* Computers
* Stationery
* Charts/posters/
* Magazines
* Video clips
* LCD projector
* Safety management resources:
* PPEs
* First aid kits
* Fire exitinguishers
* Emergency telephone numbers
* Safety plans
* Emergency procedures

## SCAFFOLDING CONTRACTS

**UNIT CODE:** CON/CU/ST/CR/04/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Source scaffolding contracts.

**Duration of Unit:** 120 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to source scaffolding contracts. It involves responding to expression of interest for scaffolding contracts, developing scaffolding contract documents and negotiating scaffolding contracts.

**Summary of Learning Outcomes**

|  |
| --- |
| 1. Respond to Expression of Interest
2. Develop contract proposals
3. Negotiate scaffold contract
 |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Respond to Expression of Interest
 | * Terms and concepts
* Basic measurements
* Site reconnaissance
* Estimation and costing
* Sketching and drawing
* Expression of interest
* Legal frame work
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Develop contract proposals
 | * Terms and concepts
* Development of firm profile
* Licences and permits
* Contract documents
* Bill of quantities
* Technical and financial proposals
* Bidding
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 1. Negotiate scaffold contract
 | * Terms and concepts
* Contract letters
* Negotiation
* Contract inception
* Payment
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods ofInstruction:**

* Direct instruction
* Interactive lectures
* Demonstrations
* Discussion
* Practical assignments
* Project
* Written assignments
* Case studies
* Field visits

**Recommended Resources**

* Manufacturer’s manual
* Computers
* Stationery
* Charts/posters/
* Magazines
* Video clips
* LCD projectors
* Permit and lincences
* Working drawings
* Legal documents and regulations
* Tools and equipment

## IMPLEMENTATION OF SCAFFOLDING WORKS

**UNIT CODE:** CON/CU/ST/CR/05/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Implement scaffolding works.

**Duration of Unit:** 300 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to implement scaffolding works. It involves mobilization of scaffolding project resources, organizing project working teams and erecting scaffolds. It also entails dismantling scaffolds and managing contract emerging issues.

**Summary of Learning Outcomes**

1. Mobilize scaffolding project resources

2. Organize project working teams

3. Erect scaffolds

4. Dismantle scaffolds

5. Manage contract emerging issues

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1.Mobilize scaffolding project resources | * Terms and concepts
* Scaffolding resources
* Systems of scaffolding
* Types of scaffolding
* Scaffold components and members
* Manuals
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 2.Organize project working teams | * Terms and concepts
* Scaffolding activities/ tasks
* Levels of working teams
* Delegation of duties
* Allocation of resources
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 3. Erect scaffolds | * Terms and concepts
* Site safety
* Scaffolding tools and equipment
* Scaffold measurements
* Surface preparation
* Setting up scaffolds
* Procedure for assembling of scaffold
* Scaffold integrity
* Maintenance of scaffolds
* Managing emerging issues
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 4.Dismantle scaffolds | * Terms and concepts
* Site safety
* Procedure of dismantling
* Temporary storage area
* Sorting out and storage
* Maintaining and servicing of components and members
* Transportation
* Final storage
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 5.Manage contract emerging issues | * Terms and concepts
* Types of contracts emerging issues
* Handling contracts emerging issues
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Demonstrations
* Discussion
* Practical
* Project
* Assignments
* Case studies
* Field visits

**Recommended Resources**

* Computers/ LCD projector
* Stationery
* Charts/posters
* Magazines
* Video clips
* Scaffolding training kits:
* Scaffold members and components
* Materials and supplies
* Tools and equipment
* PPEs

## SITE MANAGEMENT

**UNIT CODE:** CON/CU/ST/CR/06/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Manage scaffolding site.

**Duration of Unit:** 100 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to manage a scaffolding site. It involves developing site layout, setting up scaffolding site, developing and placing site signage, developing work execution schedules and controlling site activities.

**Summary of Learning Outcomes**

1. Develop site layout
2. Set up scaffolding site
3. Develop and place site signage
4. Develop work execution schedules
5. Control site activities

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| Develop site layout | * Terms and concepts
* Site reconnaissance
* Scaffold positioning
* Site organisation
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Set up scaffolding site | * Terms and concepts
* Legal and statutory requirements
* Code of practise
* Waste management
* Security and safety
* Barricading
* Mobilisation
* Storage
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Develop and place site signage | * Terms and concepts
* Risk assessment
* Safety and hazards
* Types of signage
* Signage development and use
* Removal of signage
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Develop work execution schedules | * Terms and concepts
* Scaffolding tasks and activities
* Resource allocation
* Scheduling
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| Control site activities | * Terms and concepts
* Monitoring and evaluation
* Control mechanisms
* Store’s management
* Staff welfare and integrity
* Time management
* Scaffold inspection
* Security
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Discussion
* Project
* Assignments
* Case studies
* Demonstration
* Field visits

**Recommended Resources**

* Legal and statutory documents
* Manufacturer’s manuals
* Codes of practise
* Computers
* Stationery
* Charts/posters/
* Magazines
* Video clips
* LCD projectors

## FIRM MANAGEMENT

**UNIT CODE:** CON/CU/ST/CR/07/6/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage scaffolding firm

**Duration of Unit:** 80 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to manage a scaffolding firm. It involves planning, organizing, staffing, directing and controlling scaffolding firm activities.

**Summary of Learning Outcomes**

1. Plan scaffolding firm activities
2. Organize scaffolding firm activities
3. Staff the scaffolding firm
4. Control scaffolding firm activities
5. Direct scaffolding firm activities

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Plan scaffolding firm activities
 | * Terms and concepts
* Principles of management
* Basic research on firm operations
* Development of a work plan
* Strategic planning
* Risk assessment and management
* Basic financial and accounts management
* Resource mobilization
* Budgeting
* Procurement management
* Inventory management
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Organize scaffolding firm activities
 | * Terms and concepts
* Development of organization structure
* Policy formulation
* Delegation of duties
* Resource allocation
* Implementation and co-ordination of activities
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Staff the scaffolding firm
 | * Terms and concepts
* Principles of human resource management
* Functions of human resource management
* Recruitment of staff
* Capacity building of staff
* Staff performance management
* Staff motivation
* Staff supervision
* Staff coordination
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Control scaffolding firm activities
 | * Terms and concepts
* Communication
* Control mechanisms
* Quality management
* Record keeping
* Security
* Stores management
* Market scanning
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Direct scaffolding firm activities
 | * Terms and concepts
* Monitoring and evaluation
* Risk management and mitigation
* Staff motivation, guidance and counselling
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Case studies
* Discussions
* Simulation/Role play
* Seminars
* Guest speakers

**List of Recommended Resources:**

* Computers
* Stationery
* Filing equipment
* LCD projectors
* Video clips
* Charts
* Sample documents
* Profiles

## TRADE PROJECT

**UNIT CODE:** CON/CU/ST/CR/08/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Perform trade project

**Duration of Unit:** 420 hours

**UNIT DESCRIPTION**

This unit covers the competencies required to perform trade project. It involves conducting feasibility study, developing project proposal, estimating and costing the project and implementing the project.

**Summary of Learning Outcomes**

1. Conduct feasibility study

2. Develop project proposal

3. Estimate and cost the project

4. Implement the project

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1.Conduct feasibility study | * Terms and concept
* Identification of scaffold trade project
* Project interpretation
* Types of scaffolds
* Scaffolding resources
* Basic measurements
* Reconnaissance survey
* Development of scaffold sketches
* Laying out scaffold site
* Documentation of reconnaissance survey
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 2.Develop project proposal | * Terms and concepts
* Project proposal components
* Determination of forces
* Computation of loadings
* Sketching and designing
* Development working drawings
* Preparation of preliminary bill of quantity
* Compilation of project proposal
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 3.Estimateand cost the project | * Terms and concepts
* Quantifying of scaffolding resources
* Types of costs
* Development of Bill of Quantities
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |
| 4. Erect the scaffolding project | * Terms and concepts
* Resource’s identifications, mobilisation and allocation
* Time management
* Programme management
* Interpersonal relationship
* Team work
* Surface preparation
* Setting up
* Assembling
* Modelling
 | * Oral questioning
* Written tests
* Interviews
* Observation
* Portfolio
* Third party reports
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Interactive lectures
* Demonstrations
* Discussion
* Practical
* Project assignments
* Written assignments
* Case studies

**Recommended Resources**

* Computers
* Stationery
* Charts/posters
* Magazines
* Video clips
* LCD projector
* Scaffolding training kits:
* Scaffold members and components
* Materials and supplies
* Tools and equipment
* PPEs

*END*