

**REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**CONSTRUCTION MANAGEMENT**

**LEVEL 6**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

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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 to the formulation of the Policy Framework for Reforming Education and Training (Sectional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the 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 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 development of competent human resource for the building and construction sector.

**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 and Sectional Paper No. 4 of 2016 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.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Construction Management Sector Skills Advisory Committee (SSAC) have developed this curriculum.

This curriculum is designed and organized with an outline of learning outcomes; suggested delivery methods, 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 Management SSAC, expert workers and all those who participated in the development of this curriculum.

**CHAIRPERSON,**

**TVET CDACC**

# ACKNOWLEDGEMENT

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 organizations.

I recognize with appreciation the role of Construction Management Sector Skills Advisory Committee (SSAC) members for their contribution to the development of this curriculum.

I also thank all stakeholders in the Construction Management 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 that workers in building and construction acquire competencies that will enable them to perform their work more efficiently.

**COUNCIL SECRETARY/CEO**

**TVET CDACC**

# ABBREVIATION AND ACRONYMS

|  |  |
| --- | --- |
| CDACC PPEBQSCADEHSEMSICTNEMANOSTVETBRC | Curriculum Development Assessment and Certification CouncilPersonal Protective EquipmentBill of QuantitiesComputer Aided DesignEnvironment, health and safetyEnvironmental Management System Information Computer TechnologyNational Environment Management AuthorityNational Occupational StandardsTechnical and vocational education and trainingBritish reinforcement concrete |

# KEY TO UNIT CODE

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

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

# Contents

[FOREWORD 3](#_Toc74641800)

[PREFACE 4](#_Toc74641801)

[ACKNOWLEDGEMENT 5](#_Toc74641802)

[ABBREVIATION AND ACRONYMS 6](#_Toc74641803)

[KEY TO UNIT CODE 7](#_Toc74641804)

[Contents 8](#_Toc74641805)

[COURSE OVERVIEW 9](#_Toc74641806)

[BASIC UNITS OF LEARNING 12](#_Toc74641807)

[COMMUNICATION SKILLS 13](#_Toc74641808)

[NUMERACY SKILLS 16](#_Toc74641809)

[DIGITAL LITERACY 21](#_Toc74641810)

[ENTREPRENEURIAL SKILLS 24](#_Toc74641811)

[EMPLOYABILITY SKILLS 28](#_Toc74641812)

[ENVIRONMENTAL LITERACY 34](#_Toc74641813)

[OCCUPATIONAL SAFETY AND HEALTH PRACTICES 38](#_Toc74641814)

[COMMON UNITS OF LEARNING 40](#_Toc74641815)

[TECHNICAL DRAWING 41](#_Toc74641816)

[ENGINEERING SURVEY 44](#_Toc74641817)

[CONSTRUCTION WORKS 46](#_Toc74641818)

[CONSTRUCTION MATERIALS, PLANT, TOOLS AND EQUIPMENT MANAGEMENT 51](#_Toc74641819)

[CORE UNITS OF LEARNING 53](#_Toc74641820)

[PROJECT TIME MANAGEMENT 54](#_Toc74641821)

[CONSTRUCTION PROJECT QUALITY MANAGEMENT 57](#_Toc74641822)

[PROJECT SITE SAFETY, HEALTH AND SECURITY MANAGEMENT 60](#_Toc74641823)

[CONSTRUCTION PROJECT COST MANAGEMENT 62](#_Toc74641824)

[PROJECT LABOUR MANAGEMENT 65](#_Toc74641825)

[PROJECT CONTRACT MANAGEMENT 68](#_Toc74641826)

# **COURSE OVERVIEW**

The present curriculum presents a coherent and significant set of competences to acquire in order to perform the occupation of a **Construction Manager** level 6. The competency-based approach, used to design the curriculum, is industry driven and has considered the training needs, the work situation, as well as the goals and the means to implement training units of competencies.

The units of competencies, within the present curriculum, include a statement, description and a set of expected outcomes and results at the end of the training of each unit. It also clearly mentioned the training contents, the methods of training delivery, the methods of assessment, a list of main materials/tools/equipment needed and a list of recommended resources for each of the units.

The description of elements, methods of delivery and assessment and the lists of materials/tools and equipment will have a direct influence on the choice of the theoretical and/or practical learning activities and their respective timing. The competences are the targets of training: the acquisition of each is required for certification.

The present curriculum consists of 17 units of competencies divided in three main lots:

**Basic units of learning**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code** | **Unit of Learning Title** | **Duration in Hours** | **Credit Factor** |
| CON/CU/CM/BC/01/6/A | Communication skills | 40 | 4 |
| CON/CU/CM/BC/02/6/A | Numeracy skills | 60 | 6 |
| CON/CU/CM/BC/03/6/A | Digital literacy | 60 | 6 |
| CON/CU/CM/BC/04/6/A | Entrepreneurial skills | 100 | 10 |
| CON/CU/CM/BC/05/6/A | Employability skills | 80 | 8 |
| CON/CU/CM/BC/06/6/A | Environmental literacy | 40 | 4 |
| CON/CU/CM/BC/07/6/A | Occupational safety and health practices | 40 | 4 |
| **TOTAL NUMBER OF HOURS** | **420** | **42** |

**Common Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit factor**  |
| CON/CU/CM/CC/01/ 6/A | Technical drawing | 60 | 6 |
| CON/CU/CM/CC/02/ 6/A | Engineering Survey | 336 | 33.5 |
| CON/CU/CM/CC/03/ 6/A | Construction Works | 336 | 33.5 |
| CON/CU/CM/CC/04/ 6/A | Construction materials, plant, tools and equipment management | 220 | 22 |
| **TOTAL NUMBER OF HOURS** | **952** | **95** |

**Core competency units**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code** | **Unit of Learning Title** | **Duration in Hrs** | **Credit Factor**  |
| CON/CU/CM/CR/01/ 6/A | Project time management | 300 | 30 |
| CON/CU/CM/CR/02/ 6/A | Construction project quality management | 250 | 25 |
| CON/CU/CM/CR/03/ 6/A | Project site, safety, health and security management | 300 | 30 |
| CON/CU/CM/CR/04/ 6/A | Construction project cost management | 350 | 35 |
| CON/CU/CM/CR/05/ 6/A | Project labour management | 220 | 22 |
| CON/CU/CM/CR/06/ 6/A | Project contracts management | 168 | 17 |
|  | Industrial Attachment | 480 | 48 |
| **TOTAL NUMBER OF HOURS** | **2068** | **207** |
| **GRAND TOTAL** | **3480** | **348** |

**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 Construction Management Level 5

**Or**

1. Equivalent 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

**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 National Certificate in Gemmology Level 6, an individual must demonstrate competence in all the units of competency.

These certificates will be awarded by TVET CDACC in conjunction with the training provider.

# BASIC UNITS OF LEARNING

## COMMUNICATION SKILLS

**UNIT CODE:** CON/CU/CM/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 interviews
* 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

## NUMERACY SKILLS

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

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills.

**Duration of Unit:** 60 hours

**Unit Description**

This unit describes the competencies required to demonstrate numeracy skills. It involves applying a wide range of mathematical calculations for work; applying ratios, rates and proportions to solve problems; estimating, measuring and calculating measurement for work; using detailed maps to plan travel routes for work; using geometry to draw and construct 2D and 3D shapes for work; collecting, organizing and interpreting statistical data; using routine formula and algebraic expressions for work and using common functions of a scientific calculator.

**Summary of Learning Outcomes**

1. Apply a wide range of mathematical calculations for work
2. Apply ratios, rates and proportions to solve problems
3. Estimate, measure and calculate measurement for work
4. Use detailed maps to plan travel routes for work
5. Use geometry to draw and construct 2D and 3D shapes for work
6. Collect, organize and interpret statistical data
7. Use routine formula and algebraic expressions for work
8. Use common functions of a scientific calculator

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Apply a wide range of mathematical calculations for work
 | * Fundamentals of mathematics
* Addition, subtraction, multiplication and division of positive and negative numbers
* Algebraic expressions manipulation
* Forms of fractions, decimals and percentages
* Expression of numbers as powers and roots
 | * Written tests
* Assignments
* Supervised exercises
 |
| 1. Apply ratios, rates and proportions to solve problems
 | * Rates, ratios and proportions
* Meaning
* Conversions into percentages
* Direct and inverse proportions determination
* Performing calculations
* Construction of graphs, charts and tables
* Recording of information
 | * Written tests
* Assignments
* Supervised exercises
 |
| 1. Estimate, measure and calculate measurement for work
 | * Units of measurements and their symbols
* Identification and selection of measuring equipment
* Conversion of units of measurement
* Perimeters of regular figures
* Areas of regular figures
* Volumes of regular figures
* Carrying out measurements
* Recording of information
 | * Assignments
* Supervised exercises
* Written tests
 |
| 1. Use detailed maps to plan travel routes for work
 | * Identification of features in routine maps and plans
* Symbols and keys used in routine maps and plans
* Identification and interpretation of orientation of map to North
* Demonstrate understanding of direction and location
* Apply simple scale to estimate length of objects, or distance to location or object
* Give and receive directions using both formal and informal language
* Planning of routes
* Calculation of distance, speed and time
 | * Written
* Practical test
 |
| 1. Use geometry to draw and construct 2D and 3D shapes for work
 | * Identify two dimensional shapes and routine three dimensional shapes in everyday objects and in different orientations
* Explain the use and application of shapes
* Use formal and informal mathematical language and symbols to describe and compare the features of two-dimensional shapes and routine three dimensional shapes
* Identify common angles
* Estimate common angles in everyday objects
* Evaluation of unknown angles
* Use formal and informal mathematical language to describe and compare common angles
* Symmetry and similarity
* Use common geometric instruments to draw two dimensional shapes
* Construct routine three dimensional objects from given nets
 |  |
| 1. Collect, organize and interpret statistical data
 | * + Classification of data
* Grouped data
* Ungrouped data
	+ Data collection
* Observation
* Recording
	+ Distinguishing between sampling and census
	+ Importance of sampling
	+ Errors in sampling
	+ Types of sampling and their limitations e.g.
* Stratified random
* Cluster
* Judgmental
	+ Tabulation of data
* Class intervals
* Class boundaries
* Frequency tables
* Cumulative frequency
	+ Diagrammatic and graphical presentation of data e.g.
* Histograms
* Frequency polygons
* Bar charts
* Pie charts
* Cumulative frequency curves
	+ Interpretation of data
 | * Assignments
* Supervised exercises
* Written tests
 |
| 1. Use routine formula and algebraic expressions for work
 | * + Solving linear equations
	+ Linear graphs
* Plotting
* Interpretation
* Applications of linear graphs
* Curves of first and second degree
* Plotting
* Interpretation
 | * Assignments
* Supervised exercises
* Written tests
 |
| 8. Use common functions of a scientific calculator | * Identify and use keys for common functions on a calculator
* Calculate using whole numbers, money and routine decimals and percentages
* Calculate with routine fractions and percentages
* Apply order of operations to solve multi-step calculations
* Interpret display and record result
 | * Written
* Practical test
 |

**Suggested Methods of Instruction**

* Group discussions
* Demonstration by trainer
* Practical work by trainee
* Exercises

**Recommended Resources**

* Calculators
* Rulers, pencils, erasers
* Charts with presentations of data
* Graph books
* Dice

## DIGITAL LITERACY

**UNIT CODE:** CON/CU/CM/BC/03/6/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/CM/BC/04/6/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
 |
| 6. 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/CM/BC/05/6/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/CM/BC/06/6/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/CM/BC/07/6/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/CM/CC/01/6/A

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Prepare and interpret technical drawings

**Duration of Unit:** 60hours

**Unit Description**

This unit covers the competencies required to prepare and interpret technical drawings. It involves competencies to select, use and maintain drawing equipment and materials. It also involves producing plain geometry drawings, solid geometry drawings, pictorial and orthographic drawings of components and application of Computer Aided Design (CAD) 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. 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
 |
| 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
 |
| 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
 |
| 1. Produce orthographic drawings
 | * 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
* Practical tests
* Oral questioning
 |
| 1. Produce pictorial drawings
 | * Meaning of pictorial drawings
* Drawing objects in isometric view
* Drawing objects in oblique view
 | * Observation
* Oral questioning
* Practical tests
 |
| 1. Apply CAD packages
 | * Identification of CAD packages e.g. AutoCAD
* Use of CAD packages in drawing of:
* Plane geometry
* Solid
* Orthographic
* Pictorial
 | * Observation
* Oral questioning
* Practical tests
 |

**Suggested Methods of Instruction**

* Demonstration by trainer
* Practice by the trainee
* Discussions
* Projects

**Recommended Resources**

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

## ENGINEERING SURVEY

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

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Conduct Engineering Survey

**Duration of Unit:** 336 hours

**Unit Description**

This unit describes the competence in conducting engineering survey. It involves conducting area levelling, setting out a building, performing earthworks and carrying out road surveys.

**Summary of Learning Outcomes**

1. Conduct area levelling
2. Set out a building
3. Perform earthworks
4. Carry out road survey

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Conduct area levelling
 | * Site clearance
* Reduced levels
* Contours
* Mass haul diagrams
* Levelling
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Set out a building
 | * Working drawings
* Site layout plans
* Setting out methods
* Excavation
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Perform earthworks
 | * Surveying drawings
* Site clearance
* Earthwork cross sections
* Formation levels
* Disposal of excess earthwork materials
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Carry out road survey
 | * Tacheometry survey
* Photogrammetry and survey maps
* Circular curves
* Traversing
 | * Written tests
* Oral
* Practical/Projects
 |

Suggested Methods of Instruction

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

**Recommended Resources**

* Theodolite
* Levelling staff
* Total station
* Surveyors Chain
* Engineers chain
* Tape measures
* Ranging rods
* Tripod stand
* Dumpy level
* Prismatic compass
* Plane table
* Drilling rigs
* Measuring wheel
* Survey maps
* Working drawings
* Stationery
* Printers
* Computers
* Helmet
* Dust coat
* Safety boots
* Goggles
* Dust mask
* Reflective jacket
* Gloves

## CONSTRUCTION WORKS

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

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Execute Construction Works

**Duration of Unit:** 336 hours

**Unit Description**:

This unit describes the competence in executing construction works. It involves investigating construction site, performing substructure works, performing superstructure works, installing building windows and doors, applying building finishes and carrying out building maintenance.

**Summary of Learning Outcomes**

1. Investigate construction site
2. Perform substructure works
3. Perform superstructure works
4. Install building doors and windows
5. Apply building finishes
6. Carry out building maintenance

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Investigate construction site
 | * Significance of site investigation
* Site investigation procedure
* Site investigation elements/areas
	+ Soil
	+ Existing structures/services
	+ Labour and construction materials
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Perform substructure works
 | * 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
	+ 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
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Perform superstructure works
 | * 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
	+ Channels
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Install building doors and windows
 | * Functional requirements of doors and windows
* Classification of doors and windows
	+ Classification by fabrication materials used
	+ Classification by method of construction
* Preparation of door and window schedule
* Installation procedure for doors and window frames
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Apply building finishes
 | * Types of building finished
* Methods of finishes application
* Finishes application procedures
	+ Tiles
	+ Paints
	+ Parquets
	+ Facing
	+ Pebble dash
	+ Plaster
	+ Render
	+ Floor screed
	+ Granolithic finish
	+ Terrazzo
	+ Cladding
 | * Written tests
* Oral
* Practical/Projects
 |
| 1. Carry out building maintenance
 | * Building inspection procedures
	+ Building diagnosis
* Preparation of inspection reports
* Preparation of maintenance program
 | * Written tests
* Oral
* Practical/Projects
 |

Suggested Methods of Instruction

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

**Recommended Resources**

* 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
* Cement
* Water
* Sand
* Ballast
* Reinforcement bars
* Paint
* Tiles
* Terrazzo
* Sheets
* Timber
* Steel
* Damp proofing materials
* Stones
* Bricks
* Murram
* Manufactured boards
* Glass
* Plastic
* Dust coat
* Overall
* Helmet
* Safety boots
* Gloves
* First aid kit
* Goggles
* Dust masks

## CONSTRUCTION MATERIALS, PLANT, TOOLS AND EQUIPMENT MANAGEMENT

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

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Manage construction materials, tools and equipment

**Duration of Unit:** 220 hours

**Unit Description**

This unit describes the competences in Managing Construction Materials, Tools and Equipment. It involves preparing site facility for storage, building material and equipment scheduling, ordering and receiving materials & equipment and preparing periodic construction material & equipment report

**Summary of Learning Outcomes**

1. Prepare site facility for storage
2. Prepare building material schedule
3. Prepare building equipment schedule
4. Procure building materials and equipment
5. Issue building materials and equipment

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Prepare site facility for storage
 | * Building materials, tools and equipment
* clearing
* Levelling
* Erection of the facility
 | * Written tests
* Oral
* Practical tests/Project
 |
| 1. Prepare building material schedule
 | * Types of building materials
* Standard material schedule
* Standard material rates
 | * Written tests
* Oral
* Practical tests/Project
 |
| 1. Prepare building equipment schedule
 | * Types of equipment
* Standard equipment schedule
 | * Written tests
* Oral
* Practical tests/Project
 |
| 1. Procure building materials and equipment
 | * Verification of documents
* Catalogues
* Price lists
* Ordering
* Verification of materials
* Receiving
* Recording
 | * Written tests
* Oral

 Practical tests/Project  |
| 1. Issue building materials and equipment
 | * Issuing of materials
* Recording of issued materials
 | * Written tests
* Oral
* Practical tests/Project
 |
| 1. Test building materials
 | * Construction materials
* Testing methods
* Concrete technology
 | * Written tests
* Oral
* Practical tests/Project
 |

Suggested Methods of Instruction

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

**Recommended Resources**

* Computer
* Lorries
* Lifts
* Stationery
* Files
* Gum boots
* Gloves
* Dust coats
* First aid kit
* Life jacket
* Ear muffs
* Dust mask

# CORE UNITS OF LEARNING

## PROJECT TIME MANAGEMENT

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

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Manage project time**

**Duration of Unit:** 300 hours

**Unit Description**

This unit describes the competence in managing project time. It involves preparing work plans, schedules and time programmes, monitoring and evaluating project timelines, controlling project time schedules and preparing and disseminating project timeline reports

**Summary of Learning Outcomes**

1. Prepare work plans, schedules and time programmes
2. Monitor and evaluate project timelines
3. Control project time schedules
4. Prepare and disseminate project timeline reports

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Prepare work plans, schedules and time programmes
 | * Project definition
* Meaning of statutory bodies
* Types of statutory bodies and their legal requirements
* Types of project approvals
* Project approvals procedures
* Functions of statutory approval documents
* Statutory approvals
* Definition of project work schedule
* Benefits of a work schedule in a project
* Documents necessary in the preparation of a work schedule
* Classification of project activities
* Inter-relationship of project activities
* Definition of a time project time programme
* Project work programming tools
* Process of allocating activity timelines
* Importance of reviewing previous similar jobs
* Primary sources of information
* Secondary sources of information
* Characteristics of the best practices
* Project plans definition
* Types of project plans
* Definition of Bills of Quantity (BQs)
* Roles of plans and BQs in a project
* Procedure of developing project plans and BQs
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Monitor and evaluate project timelines
 | * Definition and importance of monitoring
* Monitoring tools
* Analysis and evaluation methodologies
* Identification and implementation of control measures
* Identification of project time risk
* analysis of project time risk (categories and ranking)
* Mitigation of time risk (transfer, avoidance, delegation)
* Monitoring project time risk
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Control project time schedules
 | * Definition of client’s team
* Definition of time variation
* Time variation approval process
* Identification and implementation of control measures
* Time variation documentation
* Time variation report writing
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Prepare and disseminate project timeline reports
 | * Identification of project stakeholders
* Identification of project expectations
* Importance of communicating with project stakeholders
* Process of communicating with project stakeholders’ feedback
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Instruction**

* Project
* Direct instruction
* Case studies
* Field trips
* Discussions
* Demonstration by trainer
* Practice by the trainee

**List of Recommended Resources:**

* Computers
* Stationery
* Software
* Samples of contract documents
* Calculators
* Drawing tables
* Projectors
* Cameras
* Resource persons
* Drawing instruments
* Appropriate workshops
* Journals
* Internet connectivity

## CONSTRUCTION PROJECT QUALITY MANAGEMENT

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

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Manage project quality**

**Duration of Unit:** 250 hours

**Unit Description**

This unit describes the competence in managing project quality. It involves developing project quality plans and project methodology, acquiring project resources, undertaking project quality control and preparing project quality reports

**Summary of Learning Outcomes**

1. Develop project quality plans
2. Develop project methodology
3. Acquire project resources
4. Undertake project quality control
5. Prepare project quality reports

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Develop project quality plans
 | * Definition of quality
* Code of professional conduct and ethics
* Importance of quality in a project
* Contract documents
* Project activities
* Site dynamics
* Development of quality checklists
* Elements of a project quality plan
* Characteristics of an effective project quality plan
* Implementation methodologies of a project quality plan
* Evaluation of project quality plan
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Develop project methodology
 | * Definition of methodology in a project
* Identification of project activities
* Identification of relationships among the activities
* Types of project methodologies
* Factors determining the choice of a methodology
* Development of a project works methodology plan
* Processes of implementing project methodologies
* Evaluation of a project methodology
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Acquire project resources
 | * Definition of project resource schedule
* Types of project resources
* Identification of project activities
* Identification of the activities’ resources requirements
* Project resource sources
* Development of a procurement plan
* Implementation and review of a procurement plan
* Warehousing and storage of the project resources
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Undertake project quality control
 | * Definition and importance of a project quality control plan
* Importance and methods of project material testing
* Project plant and equipment maintenance
* Project quality inspection tools and methodology
* Work quality inspection
* Principles of work quality control
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Prepare project quality reports
 | * Contract documents analysis
* Site information documentation methods
* Features of a project quality report
* Report writing
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Instruction**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration by trainer
* Practice by the trainee

**List of Recommended Resources:**

* Computers
* Stationery
* Software
* Samples of contract documents
* Calculators
* Drawing tables
* Projectors
* Cameras
* Resource persons
* Drawing instruments
* Appropriate workshops
* Journals
* Internet connectivity
* Suppliers log in templates
* Trade tools

## PROJECT SITE SAFETY, HEALTH AND SECURITY MANAGEMENT

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

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Manage project site safety and health**

**Duration of Unit:** 300 hours

**Unit Description**

This unit describes the competence in managing project site safety and health. It involves developing project health and safety policy, conducting site health and safety inspections and coordinating project site security

**Summary of Learning Outcomes**

1. Develop project health and safety policy
2. Conduct site health and safety inspections
3. Coordinate project site security

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Develop project health and safety policy
 | * Code of professional conduct and ethics
* Definition of Occupational Safety and Health
* Legal frameworks (OSHA, County authority regulations, NEMA, WARMA, NCA)
* Environmental Management Policies
* Identification of other sources of health and safety policy
* Project risk analysis and documentation
* Characteristics of a good health and safety policy
* Formulation of occupational safety and health guidelines
* Communication of health and safety policy
* Regular review of the policy
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Conduct site health and safety inspections
 | * Definition of site safety and health audits
* Importance of conducting site health and safety inspections
* Site health and safety inspection tools and methodologies
* Site health and safety inspection stakeholders
* Evaluation of site safety and health audits
* Report writing
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Coordinate project site security
 | * Sources and characteristics of site security threats
* Process of project site security risk analysis
* Elements of security provision
* External and internal sources of security services
* Security coordination meetings
* Project site security reports
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Delivery:**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration by trainer
* Practice by the trainee

**List of Recommended Resources**

* Computers
* Stationery
* Security software
* Samples of contract documents
* Projectors
* Cameras
* Resource persons
* Drawing instruments
* Appropriate workshops
* Journals
* Internet connectivity
* Copies of health and safety laws and regulations
* Organization health and safety policies

## CONSTRUCTION PROJECT COST MANAGEMENT

**UNIT CODE:** CON/CU/CM/CR/04/6

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Manage project cost**

**Duration of Unit:** 350 hours

**Unit Description**

This unit describes the competence in managing project costs. It involves preparing project budgets, procuring, allocating and monitoring site resource utilization, controlling project cost variation and preparing project financial report

**Summary of Learning Outcomes**

1. Prepare project budget
2. Procure, allocate and monitor site resource utilization
3. Control project cost variation
4. Prepare project financial report

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Prepare project budget
 | * Code of professional conduct and ethics
* Definition of a budget
* Importance of a project budget
* Analysis of contract documents
* Identification of budget elements
* Cost risk analysis
* Identification of project activities
* Preparation of resource schedules
* Estimating and pricing project resources
* Budget preparation
* Project budget evaluation and reporting
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Procure, allocate and monitor site resource utilization
 | * Procurement laws and regulation
* Law of contract and tort
* Procurement methods (electronic or manual)
* Material handling and wastage management
* Warehousing and storage
* Material sampling and testing
* Material utilization plan development and implementation
* Resource utilization monitoring tools
* Project resource utilization report
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Control project cost variation
 | * definition of cost variation
* sources of cost variations
* cost variation approval procedures
* project cost variation documentation
* cost variation control methods
* project cost variation report writing
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Prepare project financial report
 | * Project budget and cash flow analysis
* Resource utilization analysis
* Variation and price fluctuations analysis
* Features of a project financial report
* Preparation of a project financial report
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Instruction:**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration by trainer
* Practice by the trainee

**List of Recommended Resources:**

* Computers,
* Stationery
* Software
* Samples of contract documents
* Calculators
* Drawing tables
* Projectors
* Cameras
* Resource persons
* Drawing instruments
* Appropriate workshops
* Journals
* Internet connectivity
* Budget template
* Accounting software
* Secondary storage devices
* Project materials samples
* Copies of relevant legislations

## PROJECT LABOUR MANAGEMENT

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

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Manage project human resource**

**Duration of Unit:** 220 hours

**Unit Description**

This unit describes the competence in managing project human resource. It involves developing project site human resource policy, establishing project human resource needs based on time and resource schedules, managing project team welfare and preparing project HR report

**Summary of Learning Outcomes**

1. Develop project site human resources policy
2. Establish project human resource needs based on time and resource schedules
3. Organise and allocate staff based on project activity schedules
4. Manage project team welfare
5. Prepare project HR report

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Develop project site human resources policy
 | * Code of professional conduct and ethics
* Definition of project human resources
* Identification of legislations affecting the management of human resources (labour laws)
* Types of human resource policies
* Sources of human resource policies
* Characteristics of good human resource policies
* Factors to consider when formulating human resource policies
* Development and documentation of human resource policies
* Communication of human resource policies
* Implementation and regular review of human resource policies
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Establish project human resource needs based on time and resource schedules
 | * Identification of Project activities human resource requirements
* Human resource planning process
* Regular review of the human resource plan
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Organise and allocate staff based on project activity schedules
 | * Principles of management and the associated theories
* Process of job analysis
* Implementation of the human resource plan
* Placement and induction of human resources
* Maintenance of human resources
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Manage project team welfare
 | * Motivation of human resources (theories of motivation)
* Meaning of staff welfare
* Types of welfare facilities
* Factors to consider when determining the welfare to offer employees
* Group and individual welfare facilities
* Implementation and review of staff welfare
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Prepare project HR report
 | * Importance of keeping human resource records
* Uses of human resource records
* Filing systems and methods
* Characteristics of a good filing system
* Features of a human resource management system (manual or electronic)
* Security of records
* Confidentiality of information
* Retention policy
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Instruction**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration by trainer
* Practice by the trainee

**List of Recommended Resources:**

* Computers
* Stationery
* Software
* Samples of contract documents
* Calculators
* Drawings
* Filing tables and cabinets
* Projectors
* Cameras
* Resource persons
* Appropriate workshops
* Journals
* Internet connectivity
* Filing equipments
* Secondary storage devices

## PROJECT CONTRACT MANAGEMENT

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

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: **Manage contract implementation**

**Duration of Unit:** 168 hours

**Unit Description**

This unit describes the competence in managing contract implementation. It involves managing project documentations, engaging project stakeholders, inspecting project works, managing project information and preparing project implementation report

**Summary of Learning Outcomes**

1. Manage project documentations
2. Engage project stakeholders
3. Inspect project works
4. Manage project information
5. Prepare project implementation report

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Manage project documentations
 | * Code of professional ethics and conduct
* Identification of contract documents and their functions
* Laws and regulations governing construction industry (NEMA, building codes, County Statutes, NCA Act, WARMA Act, Labour laws, land laws, property laws, insurance laws)
* Approving bodies and information centres
* Process of approval
* Development of a project documentation register
* Updating project register
* Confidentiality of the information in the register
* Security of the register
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Engage project stakeholders
 | * Definition of project stakeholders
* Identification and classification of stakeholders
* Roles of each stakeholder during the life of the project
* Types of stakeholders’ contracts
* Stakeholders engagement plan development and review
 | * Written tests
* Observation
* Oral questions
* Third party report
 |
| 1. Inspect project works
 | * Definition of a construction work plan
* Development and implementation of a construction work plan
* Definition of project works inspection plan
* Development and implementation of a project works plan
* Development and implementation of project works inspection tools and methodologies
* Documentation and projects work inspection report writing
* Project works control measures
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Manage project information
 | * Identification of project contract elements
* Importance of managing project information
* Sources of information
* Development of a project contract information management system
* Confidentiality of information
* Security of documents
* Professional ethics in handling project information
* Analysis and uses of project information
* Project information review processes
* Methods of communicating the information
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |
| 1. Prepare project implementation report
 | * Definition and importance of a project implementation report
* Elements in a project implementation report
* Types of information included in a project implementation report
* Methodologies of gathering information and findings
* Report writing and review
 | * Written tests
* Observation
* Oral questioning
* Third party report
 |

**Suggested Methods of Instruction**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration by trainer
* Practice by the trainee

**Recommended Resources:**

* Computers
* Stationery
* Software
* Samples of contract documents
* Calculators,
* Drawing tables
* Projectors
* Cameras
* Resource persons,
* Drawing instruments
* Appropriate workshops
* Journals
* Internet connectivity
* Copies of relevant laws
* Samples of contract documents
* Journal on construction history