

**THE REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**MASONRY**

**LEVEL 4**



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 Kenya’s development blue print 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 (Sessional 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 programs.

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 Construction sector’s growth and sustainable development.

**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 the Sessional 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 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 Sector Skills Advisory Committee (SSAC) 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.

The 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 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 the SSAC in ensuring that competencies required by the industry are addressed in this 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 that workers in Construction sector will acquire competencies that will enable them perform their work more efficiently.

**COUNCIL SECRETARY/CEO**

**TVET CDACC**

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# ACRONYMS

 AIDS Acquired Immune Deficiency Syndrome

 BC Basic Competency

 CDACC Curriculum Development, Assessment and Certification Council

 CC Common Competency

 CR Core Units

 2D Two Dimensional

3D Three Dimensional

 HIV Human Immuno-Deficiency Virus

 MA Masonry

 CON Construction

 ICT Information Communication Technology

 LCD Liquid Crystal Display

 NEMA National Environmental Management Authority

 OSHA Occupation Safety and Health Act

 OSHS Occupation Safety and Health Standards

 PESTEL Political Economic Social Technological Environmental and Legal

 PPE Personal Protective Equipment

 SSAC Sector Skills Advisory Committee

 SWOT Strengths Weaknesses Opportunities and Threats

 TVET Technical and Vocational Education and Training

# KEY TO UNIT CODE

 **CON/CU/MA/BC/01/4/A**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

# COURSE OVERVIEW

Masonry level 4 qualification consists of competencies that an individual must achieve to construct building substructures and superstructures, finish masonry works and produce masonry construction units.

This course consists of basic, common and core units of learning as indicated below:

**Basic Units**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of Learning Title**  | **Duration Hours**  | **Credit factor** |
| CON/CU/MA/BC/01/4/A  | Communication skills  | 20 | 2.0 |
| CON/CU/MA/BC/02/4/A  | Numeracy skills  | 25 | 2.5 |
| CON/CU/MA/BC/03/4/A  | Digital literacy  | 35 | 3.5 |
| CON/CU/MA/BC/04/4/A  | Entrepreneurial skills  | 60 | 6.0 |
| CON/CU/MA/BC/05/4/A | Employability skills  | 30 | 3.0 |
| CON/CU/MA/BC/06/4/A  | Environmental literacy  | 20 | 2.0 |
| CON/CU/MA/BC/07/4/A  | Occupational safety and health practices  | 20 | 2.0 |
| **Total** |  | **210** | **21.0** |

**Common Units**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of Learning Title**  | **Duration in Hours**  | **Credit factor** |
| CON/CU/MA/CC/01/4/A  | Mensuration and calculation  | 70 | 7.0 |
| CON/CU/MA/CC/02/4/A  | Interpretation of working drawings  | 70 | 7.0 |
| **Total**  |  | **140** | **14.0** |

**Core Units**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of Learning Title**  | **Duration in Hours**  | **Credit factor** |
| CON/CU/MA/CR/01/4/A  | Construction of building substructure | 120 | 12.0 |
| CON/CU/MA/CR/02/4/A  | Construction of building superstructure | 120 | 12.0 |
| CON/CU/MA/CR/03/4/A  | Masonry works finishing | 120 | 12.0 |
| CON/CU/MA/CR/04/4/A  | Production of masonry construction units | 120 | 12.0 |
|  | Industrial attachment | 300 | 30.0 |
| **Total**  |  | **780** | **78.0** |
| **GRAND TOTAL** |  | **1130** | **113.0** |

**Entry Requirements**

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

1. Kenya Certificate of Secondary Education (KCSE) – Mean grade E

**Or**

1. National Certificate Level 3 in Masonry

**Or**

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

**Industrial attachment**

An individual enrolled in this course will undergo industrial attachment for a period of 300 hours in a Construction establishment.

**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.

**Trainer qualification**

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

**Certification**

A candidate will be issued with a Certificate of Competency for each unit of competency. To attain the qualification National Certificate Level 4 in Masonry, the candidate must demonstrate competence in all the units of competency as given in this qualification pack.

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

# BASIC UNITS OF LEARNING

**COMMUNICATION SKILLS**

**UNIT CODE:** CON/CU/MA/BC/01/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Communication Skills

**Duration of Unit:** 20 Hours

**Unit Description**

This unit covers the competencies required demonstrate communication skills. It involves obtaining and conveying workplace information, completing relevant work-related documents, communicating information about workplace processes, leading workplace discussion and communicating workplace issues.

**Summary of Learning Outcomes**

1. Obtain and convey workplace information
2. Complete relevant work-related documents
3. Communicate information about workplace processes
4. Lead workplace discussions
5. Identify and communicate issues arising in the workplace

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Obtain and convey workplace information
 | * Communication process
* Modes of communication
* Medium of communication
* Effective communication
* Barriers to communication
* Flow of communication
* Sources of information
* Types of questions
* Organizational policies
* Workplace etiquette
* Ethical work practices in handling communication
 | * Interview
* Third party reports
 |
| 1. Complete relevant work-related documents
 | * Types and purposes of workplace documents and forms
* Methods used in filling forms and documents
* Recording workplace data
* Process of distributing workplace forms and documents
* Report writing
* Types of workplace reports
 | * Interview
* Third party reports
 |
| 1. Communicate information about workplace processes
 | * 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
 | * Interview
* Portfolio
 |
| 1. Lead workplace discussion
 | * Methods of discussion e.g.
	+ Coordination meetings
	+ Toolbox discussion
	+ Peer-to-peer discussion
* Solicitation of response
 | * Interview
* Third party reports
 |
| 1. Identify and communicate issues arising in the workplace
 | * Identification of problems and issues
* Organizing information on problems and issues
* Relating problems and issues
* Communication barriers affecting workplace discussions
 | * Interview
* Portfolio
 |

**Suggested Methods of Instructions**

* Direct instruction
* Demonstration
* Practice assignment
* Discussion
* Role play
* Brainstorming

**Recommended Resources**

* Desktop computers/laptops
* Internet connection
* Projectors
* Telephone
* Report writing templates

**NUMERACY SKILLS**

**UNIT CODE:** CON/CU/MA/BC/02/4/A

**Relationship to Occupational Standards:**

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills

**Duration of Unit:** 25hours

**Unit Description**

This unit covers the competencies required to demonstrate numeracy skills. It involves identifying and using whole numbers and simple fractions, decimals and percentages for work, identifying, measuring and estimating familiar quantities for work, reading and using familiar maps, plans and diagrams for work, identifying and describing common 2D and some 3D shapes for work, constructing simple tables and graphs for work using familiar data and identifying and interpreting information in familiar tables, graphs and charts for work.

**Summary of Learning Outcomes**

1. Identify and use whole numbers and simple fractions, decimals and percentages for work
2. Identify, measure and estimate familiar quantities for work
3. Read and use familiar maps, plans and diagrams for work
4. Identify and describe common 2D and some 3D shapes for work
5. Construct simple tables and graphs for work using familiar data
6. Identify and interpret information in familiar tables, graphs and charts for work

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify and use whole numbers and simple fractions, decimals and percentages for work
 | * Whole numbers
* Simple fractions
* Decimals
* Percentages
* Sizes
* Problem solving methods
* Calculations using the 4 operations
* Recording and communicating numerical information
 | * Written
* Practice assignments

  |
| 2. Identify, measure and estimate familiar quantities for work | * Measurement information
* Units of measurement
* Estimate familiar and simple amounts
* Selection of appropriate measuring equipment
* Calculate using familiar units of measurement
* Check measurements and results against estimates
* Using informal and some formal mathematical and general language
* Record or report results
 | * Written
* Practice assignments
 |
| 3. Read and use familiar maps, plans and diagrams for work | * Maps, plans and diagrams
* Locate items and places in familiar maps, plans and diagrams
* Recognize common symbols and keys in familiar maps, plans and diagrams
* Direction and location of objects, or route or places
* Use of informal and some formal oral mathematical language and symbols
 | * Practical test
* Written
 |
| 4. Identify and describe common 2D and some 3D shapes for work | * Common 2D shapes and 3D shapes
* Classification of common 2D shapes and designs
* Description of Use informal and some formal language to describe common two-dimensional shapes and some common three-dimensional shapes
* Construction of common 2D shapes
* Match common 3D shapes to their 2D sketches or nets
 | * Written
* Practical test
 |
| 5. Construct simple tables and graphs for work using familiar data | * Types of graphs
* Determination of data to be collected
* Selection of data collection method
* Collection of data
* Determination of variables from the data collected
* Order and collate data
* Construct a table and enter data
* Construct a graph using data from table
* Check results
* Report or discuss graph information related to work using informal and some formal mathematical and general language
 | * Written
* Practical test
 |
| 6. Identify and interpret information in familiar tables, graphs and charts for work | * Tables construction and labeling
* i.e. title, headings, rows and columns
* Interpreting information and data in simple tables
* Relaying information of relevant workplace tasks on/in a table
* Identify familiar graphs and charts in familiar texts and contexts
* Locate title, labels, axes, scale and key from familiar graphs and charts
* Identify and interpret information and data in familiar graphs and charts
* Relate information to relevant workplace tasks
 | * Written
* Practical test
 |

**Suggested Methods of Instructions**

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

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* LCD projectors
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Projectors
* Writing boards
* Mathematical tables

**DIGITAL LITERACY**

**UNIT CODE:** CON/CU/MA/BC/03/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

**Duration of Unit:** 35 hours

**Unit Description**

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software, applying computer software in solving task sand applying internet and email in communication at workplace.

**Summary of Learning Outcomes**

1. Identify computer software and hardware
2. Apply security measures to data, hardware and software
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify computer hardware and software
 | * Meaning of a computer
* Functions of a computer
* Components of a computer
* Classification of computers
 | * Written tests
* Oral
* Observation
 |
| 1. Apply security measures to data, hardware and software
 | * Data security and control
* Security threats and control measures
* Types of computer crimes
* Detection and protection against computer crimes
 | * Written tests
* Oral presentation
* Observation
* Projects
 |
| 1. Apply computer software in solving tasks
 | * Operating system
* Word processing
* Spread sheets
* Data base
 | * Oral questioning
* Observation
* Project
 |
| 1. Apply internet and email in communication at workplace
 | * Computer networks
* Uses of internet
* Electronic mail (e-mail) concept
 | * Oral questioning
* Observation
* Oral presentation
* Written report
 |

**Suggested Methods of Instructions**

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

**Recommended Resources**

* Desktop computers
* Laptop computers
* Other digital devices
* Printers
* Storage devices
* Internet access
* Computer software

**ENTREPRENEURIAL SKILLS**

**UNIT CODE:** CON/CU/MA/BC/04/4/A

**Relationship to occupational standards**

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

**Duration of unit:** 60 hours

**Unit description**

This unit covers the competencies required for creating and maintaining small scale business, establishing small business customer base, managing and growing a micro/small-scale business.

**Summary of Learning Outcomes**

1. Create and maintain small scale business
2. Establish small scale business customer base
3. Manage small scale business
4. Grow/expand small scale business

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Create and maintain small scale business
 | * Starting a small business
* Legal regulatory requirements in starting a small business
* SWOT/ PESTEL analysis
* Conducting market/industry survey
* Generation and evaluation of business ideas
* Matching competencies with business opportunities
* Forms of business ownership
* Location of a small business
* Legal and regulatory requirement
* Resources required to start a small business
* Common terminologies in entrepreneurship
* Entrepreneurship in national development
* Self-employment
* Formal and informal employment
* Entrepreneurial culture
* Myths associated with entrepreneurship
* Types, characteristics, qualities & role of entrepreneurs
* History, development and importance of entrepreneurship
* Theories of entrepreneurship
* Quality assurance for small businesses
* Policies and procedures on occupational safety and health and environmental concerns
 | * Individual/group assignments
* projects
* Written
* Oral
 |
| 1. Establish small scale business customer base
 | * Good staff/workers and customer relations
* Marketing strategy
* Identifying and maintain new customers and markets
* Product/ service promotions
* Products / services diversification
* SWOT / PESTEL analysis
* Conducting a business survey
* Generating Business ideas
* Business opportunities
 | * Individual/group assignments
* projects
* Written
* Oral
 |
| 1. Manage small scale business
 | * Organization of a small business
* Small business’ business plan
* Marketing for small businesses
* Managing finances for small business
* Production/ operation process for goods/services
* Small business records management
* Book keeping and auditing for small businesses
* Business support services
* Small business resources mobilization and utilization
* Basic business social responsibility
* Management of small business
* Word processing concepts in small business management
* Computer application software
* Monitoring and controlling business operations
 | * Oral
* Individual/group assignments
* projects
* Written
 |
| 1. Grow/expand small scale business
 | * Methods of growing small business
* Resources for growing small business
* Small business growth plan
* Computer software in business development
* ICT and business growth
 | * Individual/group assignments
* projects
* Written
 |

**Suggested Methods of Instructions**

* Instructor led facilitation of theory
* Demonstration by trainer
* Practice by trainee
* Role play
* Case study

**Recommended Resources**

* Case studies for small businesses
* Business plan templates
* Lap top/ desk top computer
* Internet
* Telephone
* Writing materials

**EMPLOYABILITY SKILLS**

**UNIT CODE:** CON/CU/MA/BC/05/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Employability Skills

**Duration of Unit:** 30 hours

**Unit Description**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

**Summary of Learning Outcomes**

1. Conduct self-management
2. Demonstrate critical safe work habits
3. Demonstrate workplace learning
4. Demonstrate workplace ethics

**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
* Emotional intelligence
* Assertiveness
* Expressing personal thoughts, feelings and beliefs
* Developing and maintaining high self-esteem
* Developing and maintaining positive self-image
* Articulating ideas and aspirations
* Accountability and responsibility
* Good work habits
* Self-awareness
* Self-development
* Financial literacy
* Healthy lifestyle practices
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate critical safe work habits
 | * Stress and stress management
* Punctuality and time consciousness
* Interpersonal communication
* Sharing information
* Leisure
* Integratingpersonal objectives into organizational objectives
* Resources utilization
* Setting work priorities
* HIV and AIDS
* Drug and substance abuse
* Handling emerging issues
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate workplace learning
 | * Personal training needs identification and assessment
* Managing own learning
* Contributing to the learning community at the workplace
* Cultural aspects of work
* Variety of learning context
* Application of learning
* Safe use of technology
* Identifying opportunities
* Workplace innovation
* Performance improvement
* Handling emerging issues
* Future trends and concerns in learning
 | * Written tests
* Oral questioning
* Portfolio of evidence
* Third party report
 |
| 1. Demonstrate workplace ethics
 | * Meaning of ethics
* Ethical perspectives
* Principles of ethics
* Values and beliefs
* 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
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of Instructions**

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

**Recommended Resources**

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

**ENVIRONMENTAL LITERACY**

**UNIT CODE:** CON/CU/MA/BC/06/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Environmental Literacy

**Duration of Unit:** 20hours

**Unit Description**

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution, demonstrating sustainable resource use and evaluating current practices in relation to resource usage.

**Summary of Learning Outcomes**

1. Control environmental hazard
2. Control environmental pollution
3. Demonstrate sustainable use of resources
4. Evaluate current practices in relation to resource usage

**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
* Purposes and content of Solid Waste Act
* 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 tests
* Oral questions
* Observation of work procedures
 |
| 1. Control environmental Pollution
 | * 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 tests
* Oral questions
* Observation of work procedures
* 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 tests
* Oral questions
* Observation of work procedures
 |
| 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 tests
* Oral questions
* Observation of work procedures
 |
| 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 tests
* Oral questions
* Observation of work procedures
 |

**Suggested Methods of Instructions**

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

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* Radio sets
* TV sets
* LCD projectors
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE)

**OCCUPATIONAL SAFETY AND HEALTH PRACTICES**

**UNIT CODE:** CON/CU/MA/BC/07/4/A

**Relationship to Occupational Standards**

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

**Duration of Unit:** 20 hours

**Unit Description**

This unit specifies the competencies required to practice safety and health and comply with OSH requirements relevant to work. It involves adhering to workplace procedures for hazards and risk prevention and participating in arrangements for workplace safety and health maintenance.

**Summary of Learning Outcomes**

1. Adhere to workplace procedures for hazards and risk prevention
2. Participate in arrangements for workplace safety and health maintenance

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment****Methods** |
| 1. Adhere to workplace procedures for hazards and risk prevention
 | * Arrangement of work area and items in accordance with Company housekeeping procedures
* Adherence to work standards and procedures
* Application of preventive and control measures, including use of safety gears/PPE
* Study and apply standards and procedures for incidents and emergencies.
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |
| 1. Participate in arrangements for workplace safety and health maintenance
 | * Participating in orientations on OSH requirements/regulations of tasks
* Providing feedback on health, safety, and security concerns to appropriate personnel as required in a sufficiently detailed manner
* Practice workplace procedures for reporting hazards, incidents, injuries and sickness
* OSH requirements/ regulations and workplace safety and hazard control procedures are reviewed, and compliance reported to appropriate personnel
* Identification of needed OSH-related trainings are proposed to appropriate personnel
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of Instructions**

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

**Recommended Resources**

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

# MENSURATION AND CALCULATION

**UNIT CODE**: CON/CU/MA/CC/01/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Measure and calculate objects’ parameters

**Duration of Unit**: 70 hours

**Unit Description**

This unit of competency covers the competencies required to measure and calculate various parameters of an object. It entails identifying objects to be measured and calculated, using and caring for measuring tools and calculation instruments and calculating parameters of a given object.

**Summary of Learning Outcomes**

1. Identify objects to be measured and calculated

2. Use and care for measuring and calculation instruments

3. Calculate parameters of a given object.

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested Assessment Methods**  |
| 1. Identify objects to be measured and calculated
 | * Geometrical shapes
* Types of geometrical objects
* Dimensions
* Measurements specifications
* Sources of measurement specification
 | * Written tests
* Observation
* Oral questioning
* Third party report
* Interviewing
 |
| 1. Use and care for measuring and calculation instruments
 | * Measurement tools
	+ Types
	+ Use
	+ Care and maintenance practices
* Calculation tools
	+ Types
	+ Use
	+ Care and maintenance practices
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. Calculate parameters of a given object
 | * Fundamental operations
* Linear measurements
* Taking measurements
* Readings measurements
* Dimensions
* Ratio and proportions
* Algebraic equations
* Systems of measurements and
* calculations
* Numerical computation
* Documentation of measurements and calculations
* Material estimation and costing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |

**Suggested Methods of Delivery:**

* Demonstration
* Practical
* Field trips
* Discussions
* Direct instruction
* ICT presentations

**Recommended Resources**

|  |
| --- |
| **Functional Masonry Workshop with the following:**  |
| **Tools and Equipment** * Micrometer gauge (In-out, depth)
* Vernier calipers (out, inside)
* Straight edge
* Try-square
* Protractor
* Steel rule
* Gauges
* Tape measure
* Pair of compass
* Pair of dividers
* Calculator
* T-Square
* SMP table
* Digital weighing machines

**Supplies*** Stationery
* A work station (desk)
* Display board
* Lcd projector
 |

# INTERPRETATION OF WORKING DRAWINGS

**UNIT CODE:** CON/CU/MA/CC/02/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Interpret and draw simple working drawings

**Duration of Unit**: 70 hours

**Unit Description**

This unit deals with competencies required to interpret and draw simple working drawings. It entails interpreting working drawings, using drawing instruments, supplies and materials, applying isometric drawings and applying different types of scales

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Use drawing instruments, supplies and materials
3. Apply isometric drawings
4. Apply different types of scales

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested Assessment Methods**  |
| 1. Interpret working drawings | * Types of working drawings
* Scales
* Measurements
* symbols
 | * Written tests
* Observation
* Oral questioning
* Third party report
* Project
* Portfolio
 |
| 2.Use drawing instruments, supplies and materials  | * Types of drawing instruments
* Drawing supplies and materials
* Maintenance of drawing instruments
* Disposal of waste supplies and materials
 | * Written tests
* Observation
* Oral questioning
* Third party report
* Interviewing
 |
| 3.Apply isometric drawings  | * Types of isometric drawings
* Use of isometric drawing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
 |
| 1. Apply different types of scales
 | * Interpretation of scales
* drawing of simple details
* Measurement transfer to the ground
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
* Project
* Portfolio
 |

**Suggested Methods of Delivery:**

* Demonstration
* Practical
* Field trips
* Discussions
* Direct instruction
* ICT presentations

**Recommended Resources**

|  |
| --- |
| **Functional Masonry Workshop with the following:**  |
| **Tools and Equipment** * Calculator
* T-Square
* Steel rule
* Lettering stencil
* Scale rule
* Drawing boards
* T-Square
* Set square
* Blue print machine
* Printer
* Plotter
* digitizer

**Supplies** * Drawing papers
* Drawing pencils
* Drawing sets
* Masking tape

Construction drawing  |

# CORE UNITS OF LEARNING

# CONSTRUCTION OF BUILDING SUBSTRUCTURE

**UNIT CODE:** CON/CU/MA/CR/01/4/A

**RELATIONSHIP TO OCCUPATIONAL STANDARDS**

This unit addresses the Unit of Competency: Construct building substructure

**Duration of Unit:** 120 hours

**UNIT DESCRIPTION**

This unit specifies the competencies required to construct building substructure. It entails interpreting working drawings, estimating and costing materials and supplies, use of tools and equipment, setting out the building, preparing and positioning formwork and reinforcement bars, casting the foundation, construction of foundation walling and ground floor slab.

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Estimate and cost materials and supplies
3. Set-out building
4. Prepare and position formwork and reinforcement bars
5. Cast the foundation
6. Construct foundation walling
7. Construct ground floor slab.

**LEARNING OUTCOMES, CONTENT AND SUGGESTED ASSESSMENT METHODS**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Interpret working drawings
 | * Working drawings
* Scales
* Conversion of measurements
* Construction symbols
* Reference points
 | * Written tests
* Observation
* Oral questioning
* Third party report
* portfolio
* Interviewing
 |
| 1. Estimate and cost Materials and supplies
 | * Construction materials
* Estimation of materials and supplies
* Costing of materials and supplies
* Preparation of schedule of materials and supplies
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
* portfolio
 |
| 1. Set-out building
 | * Reference points
* Setting out tools and equipment’s
* Setting out methods
* Profiling
* levelling
* Transferring measurements to the ground
* Excavation
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
* Portfolio
 |
| 1. Prepare and position formwork ,reinforcement bars and cast foundation concrete
 | * Foundations
* Formwork
* Reinforcement
* Concreting
* Structural drawing
* curing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
* Portfolio
 |
| 1. Construct Foundation Walls
 | * Walling types
* Masonry units
* Backfilling
* Anti-termites
* Structural drawings
* curing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
* Portfolio
 |
| 1. Construct ground floor Slab
 | * hard-core
* Blinding
* Reinforcement
* Formwork
* Damp proofing
* Ground floor beds
* Concreting
* Curing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
* Portfolio
 |

**Suggested Methods of Delivery**

* Demonstration
* Practice
* Field trips
* Discussions
* Direct instruction
* ICT presentations

**Recommended Resources**

|  |
| --- |
| **Functional Masonry Workshop with the following:** |
| **Tools and Equipment*** Club hammer
* Mason's hammer
* Chisel
* Trowels (Brick, pointing, window, corner and finishing trowels)
* Spirit level
* Brick bat gauge
* Bolster
* Cold chisel
* Hawk (Hand board)
* Sandpaper/Sponge
* Jointing knife/rod
* Stepping ladder
* Mason's line
* Plumb bob
* Measuring tools (Tape measure,
* Power tools
* PPE’s
* Spade
* Sieve
* Brush
* Straight edge
* Sputter dash
* Vibrator
* Mixer
* Tamper
* Wheelbarrow
* Mason’s Square
* Helmet
* Dumper

**Supplies and Materials*** Cement
* Sand
* Ballast
* Water
* Masonry units e.g. quarry stones, bricks, concrete hallow brocks, precast products, capped stones, dressed stones
* Reinforcing steel
* Formworks
* Additives
* Quarry dust
* Gravel
* Anti- Termite treatment
* DPM
* DPC
* Hoop iron
 |

# CONSTRUCTION OF BUILDING SUPERSTRUCTURE

**UNIT CODE:** CON/CU/MA/CR/02/4/A

**RELATIONSHIP TO OCCUPATIONAL STANDARDS**

This unit addresses the Unit of Competency: Construct building superstructure

**Duration of Unit:** 120 hours

**UNIT DESCRIPTION:**

This unit specifies the competencies required to construct building superstructure. It entails interpreting working drawings, estimating and costing materials and supplies, Setting out building super structures, preparing position and cast columns , constructing super-structure walling and suspended floor slab and beams

**SUMMARY OF LEARNING OUTCOMES**

1. Interpret working drawings
2. Estimate and cost materials and supplies
3. Set-out building super structure
4. Prepare, position and cast columns
5. Construct super-structure walling
6. Construct suspended floor slab and beams

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested Assessment Methods**  |
| 1. Interpret working drawings
 | * Working drawings
* Scales
* measurements
* Construction symbols
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Estimate,cost materials and supplies
 | * Construction materials
* supplies
* Estimation and costing
* schedule of materials
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party
* portfolio
 |
|  |  |  |
| 1. Set-out building super structure
 | * PPEs
* Working drawings
* Walling techniques
* Tools and equipment
* Use,care and maintenance of tools and equipment
* Storage
* Reference points
* Measurements
* Screeding
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Prepare, position and cast columns
 | * Measurements
* Setting out columns
* Formwork
* Reinforcements
* Structural drawings
* Casting
* Curing
* Alignments
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Construct super-structure walling
 | * Working drawings
* Wall units
* Wall types
* Opening
* Levelling
* Alignment
* Water
* Curing
* screeding
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* portfolio
 |
| 1. Construct suspended floor slab and beams
 | * Suspended floors
* Beams
* Formwork
* Reinforcements
* Structural drawings
* Reference points
* Levelling
* Alignment
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* Portfolio
* project
 |

**Suggested Methods of Delivery:**

* Demonstration
* Practice
* Field trips
* Discussions
* Direct instruction
* ICT presentations

**Recommended Resources**

|  |
| --- |
| **Functional Masonry Workshop with the following:**  |
| **Tools and Equipment** * Club hammer
* Mason's hammer
* Chisel
* Trowels (Brick, pointing, window, corner and finishing trowels)
* Spirit level
* Brick bat gauge
* Bolster
* Cold chisel
* Hawk (Hand board)
* Sandpaper/Sponge
* Jointing knife/rod
* Stepping ladder
* Mason's line
* Plumb bob
* Measuring tools (Tape measure,
* Power tools
* PPE’s
* Spade
* Sieve
* Brush
* Straight edge
* Sputter dash
* Vibrator
* Mixer
* Tamper
* Wheelbarrow
* Mason’s Square
* Helmet
* Dumper
* Sledge Hammer

**Supplies and Materials*** Cement
* Sand
* Ballast
* Water
* Masonry units e.g. quarry stones, bricks, concrete hallow brocks, precast products, capped stones, dressed stones
* Reinforcing steel
* Formworks
* Additives
* Quarry dust
* Gravel
* Anti- Termite treatment
* DPM
* DPC
* Hoop iron
 |

# FINISHING OF MASONRY WORKS

**UNIT CODE:** CON/CU/MA/CR/03/4/A

**RELATIONSHIP TO OCCUPATIONAL STANDARDS**

This unit addresses the Unit of Competency: Finish Masonry Works

**Duration of Unit:** 120 hours

**UNIT DESCRIPTION**

This unit specifies the competencies required to finish masonry works. It involves interpreting working drawings, estimating and cost materials and supplies, applying plaster and render walls, laying floor screed, applying tile and terrazzo finishing, jointing and pointing masonry wallsand facing masonry walls

.

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Estimating and costing materials and supplies
3. Apply Plaster and render walls
4. Lay Floor Screed
5. Apply tiles and Terrazo finish
6. Joint and point masonry walls
7. Face masonry walls

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested Assessment Methods**  |
| 1. Interpret working drawings
 | * working drawings
* Scales
* measurements
* Construction symbols
* Reference points
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Estimate and cost materials and supplies
 | * Construction materials
* Estimation and costing of materials
* Types of Finishing
* Schedule of materials and supplies
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Apply Wall Plaster and render walls
 | * Surface preparation
* mortar mix
* Plastering
* Rendering
* Curing
* Alignment
* Square-ness
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Lay Floor Screed
 | * Surface preparation
* mortar mix
* Screeding techniques
* Levelling
* Alignment
* slope
* Curing techniques
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Apply Tile and Terrazo finish
 | * Surface preparation
* Materials
* Reference point
* Terrazo application techniques
* curing
* Tiling
* Grouting
* Levelling
* alignment
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* portfolio
 |
| 1. Joint and point masonry walls
 | * Joint preparation
* Mortar mix
* Jointing
* Pointing
* Plumbness
* Alignment
* curing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* portfolio
 |
| 1. Face masonry walls
 | * Materials and supplies
* Surface preparation
* Mortar mix
* Facing
* Plumbness
* Alignment
* Curing
* Measurement
* Working drawing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* portfolio
 |

**Suggested Methods of Delivery:**

* Demonstration
* Practice
* Field trips
* Discussions
* Direct instruction
* ICT presentations

**Recommended Resources**

|  |
| --- |
| **Functional Masonry Workshop with the following:**  |
| **Tools and Equipment** * Club hammer
* Mason's hammer
* Chisel
* Trowels (Brick, pointing, window, corner and finishing trowels) ● Spirit level
* Brick bat gauge
* Bolster
* Cold chisel
* Hawk (Hand board)
* Sandpaper/Sponge
* Jointing knife/rod
* Stepping ladder
* Mason's line
* Plumb bob
* Measuring tools (Tape measure)
* Power tools
* PPE’s
* Spade
* Sieve
* Brush
* Straight edge
* Sputter dash
* Vibrator
* Mixer
* Tamper
* Wheelbarrow
* Mason’s Square
* Helmet
* Dumper
* Sledge hammer

**Supplies and Materials** * Cement
* Sand
* Ballast
* Water
* Masonry units (e.g. quarry stones, bricks, concrete hallow brocks, precast products, capped stones, dressed stones)
* Reinforcing steel
* Formworks
* Additives
* Quarry dust
* Gravel
* Anti- Termite treatment
* DPM
* DPC
* Hoop iron
 |

# PRODUCTION OF MASONRY CONSTRUCTION UNITS

**UNIT CODE:** CON/CU/MA/CR/04/4/A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce masonry construction units

**Duration of Unit:** 120 hours

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce masonry construction units. It entails interpreting working drawings, estimating and costing materials and supplies, producing clay masonry units, concrete masonry units, hand dressed stones and stabilized soil masonry units.

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Estimate and cost materials and supplies
3. Produce clay masonry units
4. Produce concrete masonry units
5. Produce hand dressed stones
6. Produce stabilized masonry soil units

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested Assessment Methods**  |
| 1. Interpret working drawings
 | * Working drawings
* Scales
* Measurement
* Construction symbols
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Estimate and cost materials and supplies
 | * Material and supplies
* Types of masonry units
* Schedule of materials
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Produce clay masonry units
 | * Tools and equipment
* Material and supplies
* Types of clays
* clays products
* Preparation of clay
* Moulding
* Drying
* Firing
* sorting
* Storage
* Quality control
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* portfolio
 |
| 1. Produce concrete masonry units
 | * Tools and equipment
* materials and supplies
* concrete mix
* mould preparation and assembly
* casting
* curing
* sorting
* storage
* Quality control
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Produce hand dressed stones
 | * Tools and equipment
* Materials and supplies
* Types of stones
* Dressing techniques
* Working drawings
* Storage
* Quality control
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
* portfolio
 |
| 1. Produce stabilized soil masonry units
 | * Types of soils
* Tools and equipment
* Supplies and materials
* Soil stabilization
* Moulding
* Curing
* Storage
* Quality control
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |

**Suggested Methods of Delivery:**

* Demonstration
* Practice
* Field trips
* Discussions
* Direct instruction
* ICT presentations

**Recommended Resources**

|  |
| --- |
| **Functional Masonry Workshop with the following:** |
| **Tools and Equipment** * Club hammer
* Mason's hammer
* Chisel
* Trowels (Brick, pointing, window, corner and finishing trowels) ● Spirit level
* Brick bat gauge
* Bolster
* Cold chisel
* Hawk (Hand board)
* Sandpaper
* Stepping ladder
* Mason's line
* Plumb bob
* Measuring tools (Tape measure)
* Power tools
* PPE’s
* Spade
* Sieve
* Brush
* Straight edge
* Vibrator
* Mixer
* Tamper
* Wheelbarrow
* Mason’s Square
* Helmet
* Dumper
* Sledge hammer

**Supplies and Materials** * Cement
* Sand
* Ballast
* Water
* Masonry units (e.g. quarry stones, bricks, concrete hallow brocks, precast products, capped stones, dressed stones)
* Formworks
* Additives**(Lime)**
* Quarry dust
* Gravel
* Clay
* Grass
* firewood
 |

***END***