

**THE REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**MASONRY**

**LEVEL 3**



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 toreform 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), CAP Youth Empowerment Institute and Kenya Youth Employment and Skills 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 appreciate CAP Youth Empowerment Institute, Kenya Youth Employment and Skills and Construction Sector Skills Advisory Committee (SSAC) who enabled the development of this curriculum.

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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# ABBREVIATIONS AND ACRONYMS

|  |  |
| --- | --- |
| 2D  | Two Dimensional  |
| AIDS  | Acquired Immune Deficiency Syndrome  |
| BC  | Basic Competency  |
| CBET  | Competency Based Education and Training  |
| CDACC  | Curriculum Development, Assessment and Certification Council  |
| CM  | Common  |
| CON  | Construction  |
| CR  | Core Competency  |
| HIV  | Human Immuno-deficiency Virus  |
| ICT  | Information Communication Technology  |
| LCD  | Liquid Crystal Display  |
| MA  | Masonry  |
| 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/ 3/A**

Industry or sector

Curriculum

Occupational area

Type of competency

Competency number

Competency level

Version control

# COURSE OVERVIEW

**Description of the course**

Masonry Level 3 qualification consists of competencies that an individual must achieve to enable him/her offer masonry services comprising of mensuration calculation and interpretation of working drawings. It also entails constructing simple 1 level masonry substructures, superstructures, masonry work finishing and production of simple masonry products.

**Units of Learning**

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

**Basic Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of** **Learning Title**  | **Duration****in** **Hours**  |  **Credit Factor**  |
| CON/CU/MA/BC/01/3/A  |  Communication Skills  | 15  | 1.5  |
| CON/CU/MA/BC/02/3/A  |  Numeracy Skills  | 15  | 1.5  |
| CON/CU/MA/BC/03/3/A |  Digital Literacy  | 20  | 3  |
| CON/CU/MA/BC/04/3/A  |  Entrepreneurial Skills  | 40  | 4  |
| CON/CU/MA/BC/05/3/A  |  Employability Skills  | 20  | 2  |
| CON/CU/MA/BC/06/3/A  |  Environmental Literacy  | 15  | 1.5  |
| **Unit of Learning Code**  | **Unit of** **Learning Title**  | **Duration****in** **Hours**  |  **Credit Factor**  |
| CON/CU/MA/BC/07/3/A  |  Occupational Safety and Health Practices  | 15  | 1.5  |
| **Total**  | **140**  | **14**  |

**Common Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of** **Learning Title**  | **Duration** **in** **Hours**  | **Credit Factor**  |
| CON/CU/MA/CC/01/3/A | Mensuration and Calculation | 50  | 5  |
| CON/CU/MA/CC/02/3/A  | Interpretation of Working Drawings  | 50 | 5  |
|   | **Total**  | **100**  | **10**  |

**Core** **Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of** **Learning Title**  | **Duration** **in** **Hours**  | **Credit Factor**  |
| CON/CU/MA/CR/01/3/A | Construction of Simple 1 Level Masonry Substructures  | 80  | 8  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit of Learning Code**  | **Unit of** **Learning Title**  | **Duration** **in** **Hours**  | **Credit Factor**  |
| CON/CU/MA/CR/02/3/A | Construction of Simple 1 Level Masonry Superstructures  | 80 | 8  |
| CON/CU/MA/CR/03/3/A  | Masonry Work Finishing  | 80  | 8  |
| CON/CU/MA/CR/04/3/A  | Production of Simple Masonry Products  | 80  | 8  |
|  | Industrial Attachment  | 60  | 6  |
|  | **Total**  | **380**  | **38**  |

**Entry Requirements**

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

1. Kenya Certificate of Primary Education (KCPE)

**OR**

1. KCSE Mean Grade E

OR

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

**Trainer qualification**

A trainer for this course should have a higher qualification than level 3.

**Assessment**

The course will be assessed at two levels: internally and externally. Internal assessment is continuous and is conducted by the trainer who is monitored by an accredited internal verifier while external assessment is the responsibility of TVET CDACC.

**Certification**

A candidate will be issued with a Certificate of Competency for each unit of competency. To attain the qualification National Certificate Level 3 in Masonry, the candidate must demonstrate competence in all the units of competency as given in qualification pack. These certificates will be issued by TVET CDACC in conjunction with training provider.

# BASIC UNITS OF COMPETENCY

# COMMUNICATION SKILLS

**UNIT CODE: CON/CU/MA/BC/01/3/A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Communication Skills

**Duration of Unit:** 15 hours

**Unit Description**

This unit specifies the competencies required to demonstrate communication skills. It involves, obtaining and conveying workplace information, speaking English at a basic operational level, participating in workplace meetings and discussions, and completing relevant work-related documents.

**Summary of Learning Outcomes**

1. Obtain and convey workplace information
2. Speak English at a basic operational level
3. Participate in workplace meetings and discussions
4. Complete relevant work-related documents

**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
 | * Written tests
* Oral questioning
 |
| 1. Speak English at a basic operational level
 | * English grammar
	+ Nouns, verbs, adjectives, adverbs, pronouns prepositions
* English speaking
	+ Pronunciation
	+ Simple conversations
* Taking verbal instructions
* Reading and writing in English
* Forms of expression in English
 | * Written tests
* Oral
* Role play
 |
| 1. Participate in workplace meetings and discussions
 | * Nature of workplace meetings
* Meeting protocols
* Workplace interactions
 | * Oral questioning
* Written tests
 |
| 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
 | * Written tests
* Oral questioning
 |

**Suggested Methods of Instruction**

1. Discussion
2. Role play
3. Brainstorming
4. Viewing of related videos
5. Role play

**Recommended Resources**

* Desktop computers/laptops
* Projectors
* Report writing templates
* Pens
* Notebooks

# NUMERACY SKILLS

**UNIT CODE:** **CON/CU/MA/BC/02/3/A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills

 **Duration of Unit:** 15 hours

**Unit Description**

This unit covers the competencies required to identify and undertake simple numerical processes. The person who is competent in this unit shall be able to use / work with whole numbers and money up to one hundred thousand; Locate, compare and use highly familiar measurement; Use highly familiar maps and diagrams; Identify and use some common 2D shapes; and locate specific Information in highly familiar tables, graphs and charts for work.

**Summary of Learning Outcomes**

1. Use whole numbers for work
2. Locate, compare and use highly familiar measurement for work
3. Use highly familiar maps and diagrams for work
4. Identify and use some common 2D shapes for work
5. Locate specific Information in highly familiar tables, graphs and charts for work

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Use whole numbers for work
 | * Whole numbers
* Use of Zeros
* Use of halves
* Sizes
* Grouping of numbers
* Addition and subtraction of whole numbers
* Numerical information,
* Symbols
 | * Written tests
* Assignments
* Supervised exercises
 |
| 1. Locate, compare and use highly familiar measurement for work
 | * Measurements
* Units of measurements and their use
* Digital time am and pm
* Calendars
 | * Written tests
* Assignments
* Supervised exercises
 |
| 1. Use highly familiar maps and diagrams for work
 | * + Use of Maps and
* Diagrams simple
* symbols and pictorial
	+ Giving simple oral directions to locate objects
 | * Oral
* Assignments
* Supervised exercises
 |
| 1. Identify and use some common 2D shapes for work
 | * + Two dimensional shapes
	+ Describe common objects in terms of size and shape
	+ Compare objects
	+ Group common objects based on shape, size, color and features
 | * Written tests
* Assignments
* Supervised exercises
 |
| 1. Locate specific Information in highly familiar tables, graphs and charts for work
 | * + Simple tables
	+ Features of simple graphs and charts
	+ Numerical information in tables, graphs & charts
 | * Oral
* Assignments
* Supervised exercises
 |

**Suggested Methods of Instruction**

* Instructor led facilitation of theory.
* Practical demonstration of tasks by trainer
* Role play
* Discussion
* Demonstration by trainees and comments and corrections by trainers

**Recommended Resources**

* Common 2D shapes objects
* Calculator
* Basic measuring instruments
* Mathematical tables

# DIGITAL LITERACY

**UNIT CODE: CON/CU/MA/BC/03/3/A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

**Duration of Unit:** 20 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 tasks and applying internet and email in communication at workplace.

**Summary of Learning Outcomes**

1. Identify computer hardware and software
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
 | * Definition of a computer
* Functions of a computer
* Components of a computer
* Classification of computers
* Computer software
 | * Written tests
* Practice assignments
 |
| 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
 |
| 1. Apply computer software in solving tasks
 | * Operating systems
* Word processing
* Spread sheets
* Data base
 | * Oral questioning
* Practical
 |
| 1. Apply internet and email in communication at workplace
 | * Computer networks
* Uses of internet
* Electronic mail (e-mail) concept
 | * Oral questioning
* Oral presentation
* Written test
 |

**Suggested Methods of Instruction**

1. Instructor led facilitation of theory
2. Demonstration by trainer
3. Assignments
4. Viewing of related videos
5. Group discussions

**Recommended Resources**

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

# ENTREPRENEURIAL SKILLS

**UNIT CODE: CON/CU/MA/BC/04/3/A**

**Relationship to occupational standards**

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

**Duration of unit:** 40 hours

**Unit description**

This unit describes the competencies required to demonstrate entrepreneurial competencies. It involves, developing entrepreneurial culture, identifying entrepreneurial opportunities, starting, operating and growing a small business.

**Summary of Learning Outcomes**

1. Develop entrepreneurial culture
2. Identify entrepreneurial opportunities
3. Start a small business
4. Operate a small business
5. Grow a small business

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Develop entrepreneurial culture
 | * Definition of entrepreneur
* Importance of entrepreneurship
* Common terminologies in entrepreneurship
* Entrepreneurship and employment creation
* Formal and informal employment
* Habits that promote entrepreneurial development
* Cultural factors that inhibit entrepreneurship
 | * Individual/group assignments
* Written tests
* Oral
 |
| 1. Identify entrepreneurial opportunities
 | * Types, characteristics, qualities & role of entrepreneurs
* SWOT analysis
* Generating Business ideas
* Business opportunities
* Evaluation of business opportunities
 | * Individual/group assignments
* Written tests
* Oral questioning
* Oral presentation
 |
| 1. Start a small business
 | * Factors to consider when starting a small business
* Legal requirement for starting a small business
* Procedure of starting a small business
* The dos and don’ts of starting a small business
* Challenges faced when starting a small business and mitigating factors
* Launch of a small business
 | * Oral questioning
* Individual/group assignments
* Written tests
 |
| 1. Operate a small business
 | * Organizational structure of a small business
* Managing small business finances
* Book keeping
* Business support services
* Marketing for small businesses
* Basic IT application in small business
 | * Individual/group assignments
* Written tests
 |
| 1. Grow a small business
 | * Methods of growing/expanding a small business
* Resources for growing small business
* Small business growth plan
* ICT and business growth
 | * Individual/group assignments
* Written tests
 |

**Suggested Methods of Instruction**

1. Instructor led facilitation of theory
2. Demonstration by trainer
3. assignments
4. Role play
5. Case study

**Recommended Resources**

* Case studies for small businesses
* Business plan template
* Laptop/ desktop computer
* Internet
* Telephone
* Writing materials

# EMPLOYABILITY SKILLS

**UNIT CODE:** **CON/CU/MA/BC/05/3/A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate employability skills

**Duration of Unit:** 20 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
 | 1. Self-awareness
2. Formulating personal vision, mission and goals
3. Strategies for overcoming life challenges
4. Emotional intelligence
5. Assertiveness
6. Developing and maintaining high self-esteem
7. Developing and maintaining positive self-image
8. Accountability and responsibility
9. Good work habits
10. Self-awareness
11. Financial literacy
12. Healthy lifestyle practices
 | 1. Written tests
2. Oral questioning
3. Portfolio of evidence
4. Third party report
 |
| 1. Demonstrate critical safe work habits
 | 1. Stress and stress management
2. Punctuality and time consciousness
3. Interpersonal communication
4. Sharing information
5. Resources utilization
6. HIV and AIDS
7. Drug and substance abuse
8. Handling emerging issues
 | 1. Written tests
2. Oral questioning
3. Portfolio of evidence
4. Third party report
 |
| 1. Demonstrate workplace learning
 | 1. Personal training needs identification and assessment
2. Cultural aspects of work
3. Application of learning
4. Safe use of technology
5. Identifying opportunities
6. Workplace innovation
7. Handling emerging issues
8. Future trends and concerns in learning
 | 1. Written tests
2. Oral questioning
3. Portfolio of evidence
4. Third party report
 |
| 1. Demonstrate workplace ethics
 | 1. Meaning of ethics
2. Ethical perspectives
3. Values and beliefs
4. Organization code of ethics
5. Common ethical dilemmas
6. Organization culture
7. Corruption, bribery and conflict of interest
8. Privacy and data protection
9. Harassment and mutual respect
10. Financial responsibility/accountability
11. Etiquette
12. Emerging issues in ethics
 | 1. Written tests
2. Oral questioning
3. Portfolio of evidence
4. Third party report
 |

**Suggested Methods of Instruction**

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

**Recommended Resources**

1. Computers
2. Stationery
3. Charts
4. Video clips
5. Audio tapes
6. Radio sets
7. TV sets
8. LCD projectors

# ENVIRONMENTAL LITERACY

**UNIT CODE**: **CON/CU/MA/BC/06/3/A**

**Relationship to Occupational Standards**:

This unit addresses the Unit of Competency: Demonstrate Environmental Literacy

**Duration of Unit:** 15 hours

**Unit Description**

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution and demonstrating sustainable resource use.

**Summary of Learning Outcomes**

1. Control environmental hazard
2. Control environmental Pollution
3. Demonstrate sustainable resource use

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** |  **Content** | **Suggested Assessment Methods** |
| 1. Control environmental hazard
 | * Environmental Management and Coordination Act 1999
* Solid Waste Act
* Storage of environmentally hazardous materials
* Disposal of hazardous wastes
* Types and uses of PPEs in line with environmental regulations
* Occupational Safety and Health Act 2007
 | * Written tests
* Oral questions
* Observation of work procedures
 |
| 1. Control environmental pollution
 | * Types of pollution
* Environmental pollution control and management
* Procedures for waste management
 | * Written tests
* Oral questions
* Observation of work procedures
 |
| 1. Demonstrate sustainable use of resource
 | * Types of resources
* Sustainable resource use and management
* Principles of 3Rs (Reduce, Reuse, Recycle)
 | * Written tests
* Oral questions
* Observation of work procedures
 |

**Suggested Methods of Instruction**

* Instructor led facilitation theory
* Discussion
* Demonstration by trainer
* Assignments
* Field trip

**Recommended Resources**

1. Standard operating and/or other workplace procedures manuals
2. Specific job procedures manuals
3. Solid Waste Act
4. Environmental Management and Coordination Act 1999
5. Machine/equipment manufacturer’s specifications and instructions
6. Personal Protective Equipment (PPE)

# OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE: CON**/**CU/MA/BC/07/3/A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Demonstrate safety and health practices

**Duration of Unit:** 15 hours

**Unit Description**

This unit specifies the competencies required to practice and promote safety and health at work. It entails preparing to practice safety and health at work and complying and promoting compliance of workers to organization’s occupational safety and health instructions and requirements.

**Summary of Learning Outcomes**

1. Prepare to apply workplace safety and health practices
2. Compliance with occupational safety and health Act

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Prepare to apply workplace safety and health practices
 | * Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations
* Benefits of implementing an occupational safety and health program
* Safety requirements/ regulations of own work and of other workers
* Workplace standards and procedures for incidents and emergencies
* Prevention and Control Measures for accidents, injuries and sickness
 | * Oral tests
* Written questions
* Observation of work procedures
 |
| 2. Compliance with occupational safety and health Act | * Safety instructions and safety signs
* Safe handling of tools, equipment and materials
* Use of safe guards and safety devices
* Reporting of hazards, incidents, injuries and sickness in the workplace
 | * Written tests
* Oral questions
* Observation of work procedures
 |

**Suggested Methods of Instruction**

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

**Recommended Resources**

* Occupational safety and health standards
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Client/supplier instructions
* Organizational or external personnel
* Machine/equipment manufacturer’s specifications and instructions
* Quality standards

COMMON UNITS OF COMPETENCYMENSURATION AND CALCULATION

**UNIT CODE: CON/CU/MA/CM/01/3/A**

**Relationship to Occupational Standards**

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

**Duration of Unit:** 50 Hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Distinguish 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. Distinguish 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

  |
| 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 Instruction**

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

**List of 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

**Supplies**

* Stationery
* A work station (desk)
* Display board

#

# INTERPRETATION OF WORKING DRAWINGS

**UNIT CODE:** **CON/CU/MA/CM/02/3/A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Interpret working drawings.

**Duration of Unit:** 50 Hours

**Unit Description**

This unit deals with competencies required to interpret architectural and engineering drawings. It entails using drawing instruments, supplies and materials Differentiating parts of a drawing, applying isometric drawings and applying different types of scales. It applies in the Construction Industry.

**Summary of Learning Outcomes**

1. Use drawing instruments, supplies and materials
2. Differentiate parts of a drawing
3. Apply isometric drawings
4. Apply different types of scales

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested** **Assessment** **Methods**  |
| 1. 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
 |
| 1. Differentiate parts of a drawing
 | * Types of drawings
* Symbols in a drawing

  | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. 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
* Sketching of detailed drawings
* Measurement transfer to the ground
 | * Observation
* Written tests

Oral questioning * Interviewing
* Third party report
 |

 **Suggested Methods of Instruction**

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

**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

**Supplies**

* Drawing papers
* Drawing pencils
* Drawing sets
* Masking tape
* Construction drawing

# CORE UNITS OF COMPETENCY

# CONSTRUCTION OF SIMPLE 1 LEVEL MASONRY SUBSTRUCTURES

**UNIT CODE: CON/CU/MA/CR/01/3**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Construct Simple 1 Level Masonry Substructures.

**Duration of Unit:** 80 Hours

**Unit Description**

This unit specifies the competencies required to construct Simple 1 Level Masonry Substructure. It entails interpreting working drawings, quantifying materials requirements, using masonry tools and equipment, setting out the building, laying of foundation, construction of foundation walling and ground floor slab. It applies in the construction industry.

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Quantity Materials requirements
3. Use masonry tools and equipment
4. Set-out building
5. Lay building foundation
6. Construct foundation walls
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
* Interviewing
 |
| 1. Quantity materials requirements
 | * Construction materials
* Calculation and estimation of quantities
* Preparation of schedule of materials
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. Use masonry tools and Equipment
 | * PPEs and their application Masonry standard operating procedures
* Masonry tools and equipment

    | * Written tests
* Observation
* Oral questioning
* Third party report

  |

|  |  |  |
| --- | --- | --- |
|  | * Safety, care and maintenance of masonry tools and equipment
* Use of masonry tools and equipment
* Storage masonry tools and equipment
 |  |
| 1. Set-out building
 | * Reference points
* Setting out buildings
* Setting out profile boards
* Marking out construction ground
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. Lay Building

Foundation  | * Building foundation
* Excavation of building grounds
* Compaction
* Concreting
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. Construct foundation walls
 | * Walling
* Masonry units
* Backfilling
* Anti-terminates
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. Construct ground floor slab
 | * Laying of hard-core
* Damp proofing
* Ground floors
* Concreting
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |

**Suggested Methods of Instruction**

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

 **Recommended Resources**

**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 SIMPLE 1 LEVEL MASONRY SUPERSTRUCTURES

**UNIT CODE:** **CON/CU/MA/CR/02/3**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: construct simple 1 level masonry superstructures.

**Duration of Unit:** 80 Hours

**Unit Description**

This unit specifies the competencies required to construct simple 1 level masonry superstructures. It entails interpreting working drawings, using masonry tools and equipment setting out the superstructure, construction of reinforced concrete elements and construction of masonry wall with opening. It applies in the construction industry.

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Quantity materials requirements
3. Use masonry tools and equipment
4. Set-out building superstructure
5. Construct reinforced concrete columns and ring beams
6. Construct masonry wall with openings

**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
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Quantify materials requirement
 | * Construction materials
* Calculation and estimation of quantities
* Preparation of schedule of materials
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party report
 |
| 1. Use masonry tools and equipment
 | * PPEs and their application
* Masonry standard operating procedures
* Masonry tools and equipment

Safety, care and maintenance of masonry tools and equipment * Use of masonry tools and equipment
* Storage masonry tools and equipment
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports

  |
| 1. Set-out simple building superstructure
 | * Reference points
* Setting out buildings
* Setting out profile boards
* Marking out construction ground
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Construct reinforced concrete columns and ring beam
 | * Concrete reinforcement
* Formwork
* Concreting
* Reinforcement and concrete elements
* Curing
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Construct masonry wall with openings
 | * Wall openings
* Damp proof course

(DPC) * Masonry units
* Bridging wall units
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |

**Suggested Methods of Instruction**

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

**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

# MASONRY WORK FINISHING

**UNIT CODE: CON/CU/MA/CR/03/3/A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Finish Masonry Works.

**Duration of Unit:** 80 Hours

**Unit Description**

This unit specifies the competencies required to finish masonry works. It entails Interpreting working drawings, quantifying materials requirements, using masonry tools and equipment, laying of applying wall plaster, floor screed, keying and pointing. It also involves facing of masonry walls. It applies in the construction industry.

**Summary of Learning Outcomes**

1. Interpret working drawings
2. Quantify materials requirement
3. Use masonry tools and equipment
4. Apply wall plaster with key and point
5. Lay floor screed
6. Face and render masonry walls

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested** **Assessment** **Methods**  |
| 1. Interpret working drawings
 | * Types of working drawings
* Scales in working drawings
* Conversion of measurements
* Construction symbols
* Reference points
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports

  |
| 1. Quantify materials requirement
 | * Construction materials
* Calculation and estimation of quantities
* Preparation of schedule of materials
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Use masonry tools and equipment
 | * PPEs and their application
* Masonry tools and equipment
* Safety, care and maintenance of
* Masonry tools and equipment
* Use of Masonry tools and equipment
* Storage masonry tools and equipment
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Apply wall plaster with

key and point  | * Importance of wall plumb-ness
* Types of keying
* Tools used in keying and their care
* Background preparation
* Preparation of mortar mix
* Mortar application
* Quality checks
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Lay floor screed
 | * Importance of floor level and slope
* Background preparation
* Preparation of mortar mix
* Screed techniques
* Quality checks
* Curing and curing techniques
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Face and render

Masonry walls  | * Types of facing
* Types of rendering
* Facing and rendering techniques
* Background preparation
* Preparation of adhesive/bonding/ fixing materials
* Fixing of facing
* Quality checks
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |

**Suggested Methods of Instruction**

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

**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 SIMPLE MASONRY PRODUCTS

**UNIT CODE: CON/CU/MA/CR/04/3/A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce Simple Masonry Products.

**Duration of Unit:** 80 Hours

**Unit Description**

This unit specifies the competencies required to produce simple masonry products. It entails identifying and collecting raw materials, using masonry tools and equipment, production of masonry clay units, concrete masonry products, hand dressed stone masonry products and stabilized soil masonry products. It applies in the construction industry.

**Summary of Learning Outcomes**

1. Identify and locate raw materials
2. Use masonry tools and equipment
3. Produce masonry clay units
4. Produce concrete masonry products
5. Produce hand dressed stones
6. Produce stabilized soil masonry units

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome**  | **Content**  | **Suggested** **Assessment** **Methods**  |
| 1. Identify and locate raw materials
 | * Soil profile and types
* Types of rocks and their properties
* Methods of masonry materials excavation
* Safety precautions
* Excavation tools and equipment
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Use masonry tools and

equipment   | * PPEs and their application
* Masonry standard operating procedures
* Masonry tools and equipment
* Safety, care and maintenance of masonry tools and equipment
* Use of masonry tools and equipment
* Storage masonry tools and equipment
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Produce masonry

clay units  | * Types of clays
* Types of clays products
* Preparation of clay
* Tools used in production of clays products
* Moulding of clay products
* Drying clay moulds
* Firing clay moulds
* Storage of clay products
* Quality control in clay products
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |
| 1. Produce concrete masonry

products   | * Raw materials for concrete products
* Types of concrete products tools used in production of clays products
* Preparation of concrete material
* Batching mixing
* Moulding of concrete products
* Curing of concrete moulds
* Storage of concrete products
* Quality control in concrete products
 | * Observation
* Written tests
* Oral questioning
* Interviewing

 * Third party reports
 |
| 1. Produce hand dressed stones

  | * Raw materials for concrete products
* Types of concrete products Tools used in production of clays products
* Preparation of concrete material
* Batching mixing
* Moulding of concrete products
* Curing of concrete moulds
* Storage of concrete products
* Quality control in concrete products.
 | * Observation
* Written tests
* Oral questioning
* Interviewing

Third party reports  |
| 1. Produce stabilized

soil masonry units | * Types of soils
* Tools and equipment for soil stabilization
* Supplies and materials for soil stabilization
* Stabilization of soil
* Moulding the blocks
* Curing stabilized blocks
* Storage of clay products
* Quality control in clay products
 | * Observation
* Written tests
* Oral questioning
* Interviewing
* Third party reports
 |

**Suggested Methods of Instruction**

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

**Recommended Resources**

Functional Masonry Workshop with the following:

* 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