

**THE REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**CARPENTRY AND JOINERY**

**ARTISAN**



TVET CDACC

P.O BOX 15745-00100

NAIROBI

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint, Vision 2030 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 of Kenya 2010 and this resulted in 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 shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Carpentry and Joinery level 4. These Occupational Standards will also be the basis for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards 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 Sessional Paper No. 4 of 2016 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification in TVET. This called for shift to CBET in order to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Construction Sector Skills Advisory Committee (SSAC), have developed these Occupational Standards for a Carpentry and Joinery Artisan. These standards will be the bases for development of competency-based curriculum for Carpentry and Joinery level 4.

The occupational standards are designed and organized with clear performance criteria for each element of a unit of competency. These standards also outline the required knowledge and skills as well as evidence guide.

I am grateful to the Council members, Council Secretariat, Construction SSAC, expert workers and all those who participated in the development of these occupational standards.

**CHAIRPERSON, TVET CDACC**

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# ACKNOWLEDGMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided inputs towards the development of these Standards.

I thank TVET Curriculum Development, Assessment and Certification Council (TVETCDACC) for providing guidance on the development of these Standards. My gratitude goes to Construction Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I thank all the individuals and organizations who participated in the validation of these Standards.

I acknowledge all other institutions which in one way or another contributed to the development of these standards.

**CHAIRPERSON**

**CONSTRUCTION SECTOR SKILLS ADVISORY COMMITTEE**

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# 

**ABBREVIATIONS AND ACRONYMS**

A Control version

AIDS Acquired Immunodeficiency Syndrome

BC Basic Competency

CAJ Carpentry and Joinery

CBET Competency Based Education and Training

CC Common Competency

CDACC Curriculum Development Assessment Certification Council

CEO Council Secretary

CON Construction

CPU Central Processing Unit

CR Core Unit

EMCA Environmental Management and Coordination Act

HIV Acquired Immunodeficiency Virus

ICT Information Communication Technology

ISO International Organization for Standardization

KE Kinetic energy

OS Occupational Standard

OSH Occupational Safety and Health

PE Potential Energy

PESTEL Political Environmental Social Technological Economic Legal

PPE Personal Protective Equipment

SOPStandard Operating Procedure

SSAC Sector Skills Advisory Committee

SWOT Strength Weakness Opportunity Threat

TVET Technical and Vocational Education and Training

**KEY TO UNIT CODE**

**CON / OS /CAJ/BC/01/4/A**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

**OVERVIEW**

Carpentry and Joinery Level 4 qualification constis of competencies that a person must achieve to enable him/her to construct doors & door frames construct windows & window frames, construct furniture items ,construct & erect roof structures, perform joiners second fixing andconstruct timber floors and prefabricated buildings.

Carpentry and Joinery Level 4 qualification consists of the following basic, common and core units of competency.

**BASIC UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| CON/OS/CAJ/BC/01/4/A | Demonstrate Communication Skills |
| CON/OS/CAJ/BC/02/4/A | Demonstrate Numeracy Skills |
| CON/OS/CAJ/BC/03/4/A | Demonstrate Digital Literacy |
| CON/OS/CAJ/BC/04/4/A | Demonstrate Entrepreneurial Skills |
| CON/OS/CAJ/BC/05/4/A | Demonstrate Employability Skills |
| CON/OS/CAJ/BC/06/4/A | Demonstrate Environmental Literacy |
| CON/OS/CAJ/BC/07/4/A | Demonstrate Occupational Safety and Health Practices |

**COMMON UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| CON/OS/CAJ/CC/01/4/A | Apply Basic Mathematics |
| CON/OS/CAJ/CC/02/4/A | Apply Technical Drawing |
| CON/OS/CAJ/CC/03/4/A | Apply Science |
| CON/OS/CAJ/CC/04/4/A | Perform Temporary Works |

**CORE UNIT OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| CON/OS/CAJ/CR/01/4/A | Construct Doors & Door Frames |
| CON/OS/CAJ/CR/02/4/A | Construct Windows & Window Frames |
| CON/OS/CAJ/CR/03/4/A | Construct Furniture Items |
| CON/OS/CAJ/CR/04/4/A | Construct & Erect Roof Structures |
| CON/OS/CAJ/CR/05/4/A | Perform Joiners Second Fixing |
| CON/OS/CAJ/CR/06/4/A | Construct Timber Floors And Prefabricated Buildings |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE: CON/OS/CAJ/BC/01/4/A**

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Obtain and convey workplace information | 1. Specific and relevant information is accessed from ***appropriate sources*** based on standard procedures 2. Effective questioning, active listening and speaking skills are used to gather and convey information based on communication needs 3. Appropriate ***medium*** is used to transfer information and ideas in accordance with workplace guidelines 4. Appropriate non- verbal communication is used as per the communication needs 5. Appropriate lines of communicationwith supervisors and colleagues are identified and followed based on workplace requirements 6. Location and storage of information is undertaken according to workplace procedures    1. Personal interaction is carried out clearly and concisely according to workplace requirements |
| 1. Complete relevant work-related documents | * 1. Range of forms relating to conditions of employment are completed according to workplace procedures   2. Workplace data is recorded based on workplace requirements   3. Errors in recording information are identified and acted upon in accordance with workplace policies   4. Reporting requirements are completed according to organizational guidelines |
| 1. Communicate information about workplace processes | 1. Information sources are identified according to workplace procedures 2. ***Methods of communication*** are selected based on workplace guidelines 3. Multiple operations are communicated according to workplace structure 4. Work-related questions are asked and responded based on set protocols 5. Information is selected and organized according to workplace requirements 6. Verbal and written reporting is undertaken as per workplace requirements 7. Communication is maintained according to workplace standards |
| 1. Lead workplace discussions | 1. Response to workplace issues are sought and provided as per workplace protocol 2. Constructive contributions are made based on ***workplace discussions*** 3. Workplace objectives and action plan are communicated according to workplace requirements |
| 1. Identify and communicate issues arising in the workplace | 1. Issues and problems are identified as per workplace guidelines 2. Problems and issues in the workplace are organized according to workplace operations 3. Dialogue is initiated with appropriate personnel as per workplace structure 4. Problems and issues raised are communicated as per the workplace reporting procedures |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Methods of communication mayinclude but not limited to: | * Non-verbal gestures * Verbal * Face to face * Two-way radio * Speaking to groups * Using telephone * Written * Internet |
| 1. Workplace discussion may include but not limited to: | * Coordination meetings * Toolbox discussion * Peer-to-peer discussion |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Active listening
* Interpretation
* Negotiation
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Organization requirements for written and electronic communication methods
* Effective verbal communication methods
* Report writing
* Effective questioning techniques (clarifying and probing)
* Workplace etiquette

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Dealt with a range of communication/information at one time 2. Made constructive contributions in workplace issues 3. Sought workplace issues effectively 4. Responded to workplace issues promptly 5. Presented information clearly and effectively in written form 6. Used appropriate sources of information 7. Asked appropriate questions 8. Provided accurate information |
| 1. Resource Implications | 1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | 1. Third-party reports 2. Portfolio 3. Interview 4. Written tests 5. Observation 6. Oral questioning |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE NUMERACY SKILLS

**UNIT CODE: CON/OS/CAJ/BC/02/4/A**

**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

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |  |
| --- | --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range.*** |
| 1. Identify and use whole numbers and simple fractions, decimals and percentages for work | | 1. Simple fractions, decimals and percentages identified and interpreted as per standard operating procedures. 2. Understanding of place value by organising numbers from smallest to largest demonstrated as SOPs 3. Required numerical information located and decision made on appropriate method to solve a problem as per SOPs 4. Limited range of calculations performed using the four operations using SOPs 5. Links between operations described as per SOPs 6. Estimations made to check reasonableness of results of problem-solving process as SOPs 7. Numerical information recorded, and the result of the task communicated using informal and some formal language and symbolism as per workplace procedures |
| 1. Identify, measure and estimate familiar quantities for work | 1. Measurement information in workplace tasks and texts identified and interpreted as per workplace procedures. 2. Familiar units of measurement needed for tasks is identified as per measurements manuals/charts 3. Familiar and simple amounts estimated as per workplace procedures. 4. Appropriate measuring equipment selected as per SOPs 5. ***Simple measuring equipment*** graduated in familiar units to measure relevant quantities is used as per graduation manuals. 6. Calculation done using familiar units of measurement as per SOPs 7. Measurements and results checked against estimates as per job specifications. 8. Results are recorded or reported as per workplace procedures 9. Results relevant to the workplace task are communicated using informal and some formal mathematical and general language as per workplace procedures. |
| 1. Read and use familiar maps, plans and diagrams for work | 1. Items and places are in familiar maps, plans and diagrams as per SOPs 2. Common symbols and keys recognised in familiar maps, plans and diagrams as per SOPs 3. Understanding of direction and location demonstrated by describing the location of objects, or route to familiar places as per SOPs 4. Instructions to locate familiar objects or places are given and followed as per SOPs 5. Informal and some formal oral mathematical language and symbols are used as per SOPs |
| 1. Identify and describe common 2D and some 3D shapes for work | 1. ***Common 2D shapes and some common 3D shapes*** in familiar situations are identified and named as per job requirements 2. Common 2D shapes and designs are compared and classified as per SOPs 3. Informal and some formal language used to describe common two-dimensional shapes and some common three-dimensional shapes in accordance with workplace procedures. 4. Simple items used to draw or construct common 2D shapes as per workplace procedures. 5. Common 3D shapes matched to their 2D sketches or nets as per SOPs |
| 1. Construct simple tables and graphs for work using familiar data | 1. Common types of graphs are identified and named as per SOPs 2. Familiar data to be collected is determined in accordance with job specifications. 3. A method to collect data is selected in accordance with workplace procedures. 4. A small amount of simple familiar data is collected as per workplace procedures 5. One or two variables determined from the data collected as per SOPs. 6. Data ordered and collated as per standard operating procedures. 7. A table is constructed and data entered as per SOPs 8. Graphs are constructed using data from table as per job specifications 9. Results are promptly checked as per workplace procedures 10. Graph information related to work is reported or discussed using informal and some formal mathematical and general language as per workplace procedures |
| 1. Identify and interpret information in familiar tables, graphs and charts for work | 1. Simple tables are identified in familiar texts and contexts in accordance with workplace procedures 2. Title, headings, rows and columns located in familiar tables as per SOPs 3. Information and data in simple tables identified and interpreted as per workplace procedures. 4. Information is related in accordance with workplace tasks 5. Familiar graphs and charts are identified in familiar texts and contexts as per SOPs 6. Title, labels, axes, scale and key from familiar graphs and charts are located as per SOPs 7. Information and data in familiar graphs and charts are identified and interpreted as per job requirements 8. Information is related to relevant workplace tasks as per job requirements. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| * Simple measuring equipment may include but not limited to: | * Rulers * Watches/clocks * Scales * Thermometers * AVO meter |
| * Common 2D shapes and common 3D shapes may include but not limited to: | * Round * Square * Rectangular * Triangle * Sphere * Cylinder * Cube * Polygons * Cuboids |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Measuring
* Logical thinking
* Computing
* Drawing of graphs
* Applying mathematical formulas
* Analytical

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Types of common shapes
* Differentiation between two dimensional shapes / objects
* Formulae for calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Fundamental operations (addition, subtraction, division, multiplication)
* Rounding techniques
* Types of fractions
* Different types of tables and graphs
* Meaning of graphs, such as increasing, decreasing, and constant value
* Preparation of basic data, tables & graphs

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   * 1. Simple fractions, decimals and percentages are correctly identified and interpreted   2. Performed a limited range of calculations using the 4 operations   3. Performed calculations using familiar units of measurement   4. Recognised common symbols and keys in familiar maps, plans and diagrams   5. Constructed simple tables and graphs using familiar data   6. Identified and interpret information in familiar tables, graphs and charts |
| 1. Resource Implications | 1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written Test 2. Interview 3. Oral Questioning |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE DIGITAL LITERACY

**UNIT CODE: CON/OS/CAJ/BC/03/4/A**

**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.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify computer software and hardware | * 1. ***Appropriate computer software*** is identified according to manufacturer’s specification   2. ***Appropriate computer hardware*** is identified according to manufacturer’s specification |
| 1. Apply security measures to data, hardware, software | * 1. ***Data security and privacy are classified*** in accordance with the technological situation   2. ***Security and control measures*** are applied in accordance with laws governing protection of ICT   3. Computer threats and crimes are detected as per information security management guidelines.   4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 1. Apply computer software in solving tasks | * 1. Basic word processing concepts are applied in resolving workplace tasks   2. Word processing utilities are applied in accordance with workplace procedures   3. Data is manipulated on worksheet in accordance with office procedures |
| 1. Apply internet and email in communication at workplace | * 1. Electronic mail is applied in workplace communication in accordance with office procedures   2. Office internet functions are defined and executed in accordance with office procedures   3. Network configuration and uses are determined in accordance with office operations procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| 1. Appropriate computer software may include but not limited to: | * Operating system * MS office * Web browser * Media players |
| 1. Appropriate computer hardware may include but not limited to: | * Computer Case * Monitor * Keyboard * Mouse * Hard Disk Drive * Motherboard * Video Card |
| 1. Data security and privacy may include but not limited to: | * Confidentiality * Cloud computing * Confidentiality * Cyber terrorism * Integrity -but-curious data serving |
| 1. Security and control measures may include but not limited to: | * Countermeasures and risk reduction * Cyber threat issues * Risk management |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical
* Interpretation
* Typing
* Communication
* Computing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Input and output devices
* Central processing Unit (CPU)
* Peripherals
* Storage Media
* Software concept
* Types of concept
* Function of computer software
* Data security and privacy
* Security threats and control measures
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Word processing;
* Functions and concepts of word processing.
* Documents and tables creation and manipulations
* Mail merging
* Word processing utilities
* Spread sheet;
* Meaning, formulae, function and charts, uses, layout, data manipulation and application to cell
* Networking and Internet;
* Meaning, functions and uses of networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and apply emerging trends and issues in ICT
* Challenges posed by emerging trends and issues

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified input, output, CPU and storage media devices of computers in accordance to computer specification   2. Identified concepts, types and functions of computer software according to operation manual   3. Identified and controlled security threats   4. Detected and protected computer crimes   5. Applied word processing in office tasks   6. Prepared work sheet and applied data to the cells in accordance to workplace procedures   7. Used Electronic Mail for office communication as per workplace procedure   8. Applied internet and World Wide Web for office tasks in accordance with office procedures   9. Applied laws governing protection of ICT |
| 1. Resource Implications | * 1. Access to relevant workplace where assessment can take place   2. Appropriately simulated environment where assessment can take place   3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Practical assignment   3. Interview   4. Oral Questioning   5. Observation |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# 

# DEMONSTRATE ENTREPRENEURIAL SKILLS

**UNIT CODE: CON/OS/CAJ/BC/04/4/A**

**UNIT DESCRIPTION**

This unit covers the competencies required demonstrate entrepreneurial skills. It involvescreating and maintaining small scale business, establishing small scale business customer base, managing small scale business and growing/ expanding small scale business.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Create and maintain small scale business | 1. Generation and evaluation of business ideas is undertaken in accordance with the existing procedure 2. Competencies are matched with business opportunities in accordance with business practices. 3. Procedure for starting a small business is identified as per the legal requirements 4. SWOT/ PESTEL analysis and or industrial survey is carried out according to office procedures 5. ***Business operations*** are monitored and controlled following established procedures. 6. Quality assurance measures are implemented in accordance with the business practices. 7. Good relations are maintained with staff/workers as per the workplace policies. 8. Policies and procedures on occupational safety and health and environmental concerns are constantly observed as per the workplace policies |
| 1. Establish small scale business customer base | 1. Good customer relations are maintained in accordance with office procedures 2. New customers and markets are identified, explored and reached out to according to the marketing plan 3. Promotions/Incentives are offered to loyal customers in accordance with office procedures 4. Additional products and services are evaluated and tried in accordance with marketing strategy 5. Customer record is maintained in accordance with office procedures |
| 1. Manage small scale business | 1. Enterprise is built up and sustained in line with judicious control of cash flows. 2. Profitability of enterprise is ensured as per the internal controls. 3. Unnecessary or lower-priority expenses and purchases are avoided as per the marketing strategy 4. Basic cost-benefit analysis are undertaken in accordance with office procedures 5. Basic financial management are undertaken in accordance with office procedures 6. Basic financial accounting in undertaken in accordance with office procedures 7. Business ***internal controls*** are implemented in accordance with office procedure 8. Setting business priorities and strategies is carried out according to office procedures 9. Preparation and interpretation of basic financial statements is undertaken in accordance with set procedures 10. Preparation of business plansfor small business is undertaken in accordance with ***business strategy*** 11. Business Social Responsibility is maintained in accordance with Standard Operations Procedures (SOP) |
| 1. Grow/ expand small scale business | 1. Prepared business growth strategy for small sale business in accordance with office procedures 2. Incorporated technology in small scale business growth in accordance with technological trends 3. Emerging issues and trends are considered in accordance with business growth strategy 4. Built audience interest in product/service according to growth strategy 5. Boosted cooperate communication according to business ***communication strategy*** |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Business operations may include but not limited to: | * Purchasing * Accounting/administrative * Work production/operations/sales * Marketing |
| 1. Internal control may include but not limited to: | * Accounting systems * Financial statements/reports * Cash management * Human resource management |
| 1. Business Strategy may include but not limited to: | * Management of wastages * Environmental Conservation |
| 1. Communication strategy may include but not limited to: | * Blue print of exchange of information * Technology and exchange of information |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Marketing
* Advertising
* Basic bookkeeping
* Accounting
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Generation and evaluation of business ideas
* Legal requirements for starting a small business
* SWOT/ PESTEL analysis
* Occupational Safety and Health
* Public relations concepts
* Business plan
* Business financing
* Marketing strategies
* Business management and control
* Production/ operation process
* Product promotion strategies
* Market and feasibility studies
* Business ethics
* Building customer relations
* Business models and strategies
* Types and categories of businesses
* Business internal controls
* Relevant national and local legislation and regulations
* Basic quality control and assurance concepts
* Building relations with customer and employees
* Building competitive advantage of the enterprise
* Business growth strategies

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |  |
| --- | --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   |  | | --- | | 1. Demonstrated entrepreneurial skills 2. Demonstrate competencies to create a small-scale business 3. Demonstrated ability to conceptualize and plan a micro/small business 4. Grew customer base for the small-scale business 5. Demonstrated ability to manage/operate a micro/small-scale business 6. Demonstrated competencies to grow a micro/small-scale business | |
| 1. Resource Implications | |  | | --- | | The following resources should be provided: |  1. Assessment location 2. Case studies on micro/small-scale enterprises 3. Assessment materials |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   |  |  | | --- | --- | | 1. Written tests 2. Observation 3. Oral questioning 4. Portfolio 5. Projects |  | |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE EMPLOYABILITY SKILLS**

**UNIT CODE:** CON/OS/CAJ/BC/05/4/A

**UNIT DESCRIPTON**

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.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Conduct self-management | 1. Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 2. Emotional intelligence is demonstrated as per workplace requirements. 3. Individual performance is evaluated and monitored according to the agreed targets. 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for own actions are demonstrated based on workplace instructions. 6. Self-esteem and a positive self-image are developed and maintained based on values. 7. Time management, attendance and punctuality are observed as per the organization policy. 8. Goals are managed as per the organization’s objective 9. Self-strengths and weaknesses are identified based on personal objectives |
| 1. Demonstrate critical safe work habits | 1. Stress is managed in accordance with workplace policy. 2. Punctuality and time consciousness is demonstrated in line with workplace policy. 3. Personal objectives are integrated with organization goals based on organization’s strategic plan. 4. ***Resources*** are utilized in accordance with workplace policy. 5. Work priorities are set in accordance to workplace goals and objectives. 6. Leisure time is recognized and utilized in line with personal objectives. 7. ***Drugs and substances of abuse*** are identified and avoided based on workplace policy. 8. HIV and AIDS prevention awareness is demonstrated in line with workplace policy. 9. Safety consciousness is demonstrated in the workplace based on organization safety policy. 10. ***Emerging issues*** are identified and dealt with in accordance with organization policy. |
| 1. Demonstrate workplace learning | * 1. Learning opportunities are sought and managed based on job requirement and organization policy.   2. Improvement in performance is demonstrated based on courses attended.   3. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job   4. Time and effort is invested in learning new skills based on job requirements   5. Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy.   6. New systems are developed and maintained in accordance with the requirements of the job.   7. Awareness of personal role in workplace ***innovation*** is demonstrated based on requirements of the job. |
| 1. Demonstrate workplace ethics | 1. Policies and guidelines are observed as per the workplace requirements 2. Self-worth and professionalism is exercised in line with personal goals and organizational policies 3. Code of conduct is observed as per the workplace requirements 4. Integrity is demonstrated as per legal requirement |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| 1. Personal objectives may include but not limited to: | * Long term * Short term * Broad * Specific |
| 1. Feedback may include but not limited to: | * Verbal * Written * Informal * Formal |
| 1. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group |
| 1. Drug and substance abuse may include but not limited to: | * Alcohol * Tobacco * Miraa * Over-the-counter drugs * Cocaine * Bhang * Glue |
| 1. Emerging issues may include but not limited to: | * Terrorism * Social media * National cohesion * Open offices |
| 1. Range of media for learning may include but not limited to: | * Mentoring * peer support and networking * IT and courses |
| 1. Innovation may include but not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Interpersonal
* Critical thinking
* Observation
* Organizing
* Record keeping
* Problem solving
* Decision Making
* Resource utilization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies
* Company operations, procedures and standards
* Occupational Health and safety procedures
* Fundamental rights at work
* Personal hygiene practices
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Record keeping
* Workplace problems and how to deal with them
* Assertiveness
* Team work
* HIV and AIDS
* Drug and substance abuse
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Emerging issues
  + Social media
  + Terrorism
  + National cohesion

###### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   * 1. Conducted self-management   2. Demonstrated critical safe work habits   3. Demonstrated workplace learning   4. Demonstrated workplace ethics |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE:** CON/OS/CAJ/BC/06/4/A

**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.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Control environmental hazard | * 1. Storage methods for environmentally hazardous materials are followed according to environmental regulations and OSHS.   2. Disposal methods of hazardous wastes are followed according to environmental regulations and OSHS.   3. ***PPE*** is used according to OSHS. |
| 1. Control environmental pollution | * 1. ***Environmental pollution*** ***control measures*** are compiled following standard protocol.   2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999   3. Methods for minimizing noise pollution complied following environmental regulations. |
| 1. Demonstrate sustainable use of resource s | * 1. Methods for minimizing wastage are complied with.   2. ***Waste management procedures*** are employed following principles of 3Rs (Reduce, Reuse, Recycle)   3. Methods for economizing or reducing resource consumption are practiced. |
| 1. Evaluate current practices in relation to resource usage | * 1. Information on resource efficiency ***systems and procedures*** are collected and provided as per work groups/sector   2. ***Current resource usage*** is measured and recorded as per work group/sector   3. Current purchasing strategies are analyzed and recorded according to industry procedures.   4. Current work processes to access information and data is analyzed following enterprise protocol. |
| 1. 5. Identify environmental legislations/conventions for environmental concerns | 1. Environmental legislations/conventions and local ordinances are identified according to the different environmental aspects/impact 2. Industrial standard/environmental practices are described according to the different environmental concerns |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPE may include but are not limited to: | * Masks * Gloves * Goggles * Safety hat * Overall * Hearing protector * Safety boots |
| 1. Environmental pollution control measures may include but are not limited to: | * Methods for minimizing or stopping spread and ingestion of airborne particles * Methods for minimizing or stopping spread and inhaling gases and fumes * Methods for minimizing or stopping spread and ingestion of liquid wastes |
| 1. Waste management procedures may include but are not limited to: | * Sorting * Storing of items * Recycling of items * Disposal of items * Handling * Transport |
| 1. Current resources usage may include but are not limited to: | * Electric * Water * Fuel * Telecommunications * Supplies * Materials |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Measuring
* Recording
* Analytical
* Monitoring
* Writing
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Storage methods of environmentally hazardous materials
* Disposal methods of hazardous wastes
* Usage of PPE Environmental regulations
* OSHS
* Types of pollution
* Environmental pollution control measures
* Different solid wastes
* Solid waste management
* Different noise pollution
* Methods of minimizing noise pollution
* Solid Waste Act
* Methods of minimizing wastage
* Waste management procedures
* Economizing of resource consumption
* Principle of 3Rs
* Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Types of workplace environmental hazards
* Environmental regulations
* Environmental regulations applying to the enterprise.
* Procedures for assessing compliance with environmental regulations.
* 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 current work processes to access information and data Analysis of data and information

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Controlled environmental hazards 2. Controlled environmental pollution 3. Demonstrated sustainable resource use 4. Evaluated current practices in relation to resource usage |
| 1. Resource Implications | The following resources should be provided:   * 1. Workplace with storage facilities   2. Tools, materials and equipment relevant to the tasks (e.g. cleaning tools, cleaning materials, trash bags, etc.)   3. PPEs   4. Manuals and references   5. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection   6. Case studies/scenarios relating to environmental Protection |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written tests 4. Third party reports 5. Portfolio |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE OCUPATIONAL SAFETY AND HEALTH PRACTICES**

**UNIT CODE:** CON/OS/CAJ/BC/07/4/A

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Adhere to workplace procedures for hazards and risk prevention | 1. Arrangement of work area and items in accordance with   workplace procedures requirements   1. Work standards and procedures are followed based on instructions 2. ***Prevention and control measures*** are applied based on instructions |
| 1. Participate in arrangements for workplace safety and health maintenance | 1. Orientations on ***OSH requirements and regulations*** is undertaken in line with policy. 2. Feedback on occupational health and safety are provided as per workplace instructions. 3. Workplace procedures for reporting hazards, incidents, injuries and sickness are adhered to as per workplace policy. 4. ***OSH-related training needs*** are identified and proposed as per workplace policy. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Prevention and control measures may include but are not limited to: | * Eliminate the hazard * Isolate the hazard * Substitute the hazard with a safer alternative * Use administrative controls to reduce the risk * Use engineering controls to reduce the risk * Use personal protective equipment * Safety, Health and Work Environment Evaluation * Periodic and/or special medical examinations of workers |
| 1. Safety gears /PPE (Personal Protective Equipment’s) may include but are not limited to: | * 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 |
| 1. Incidents and emergencies may include but are not limited to: | * Chemical spills * Equipment/vehicle accidents * Explosion * Fire * Gas leak * Injury to personnel * Structural collapse * Toxic and/or flammable vapors emission. |
| 1. OSH requirements / regulations may include but are not limited to: | * Building code * Permit to Operate |
| 1. OSH-related trainings may include but are not limited to: | * Safety Orientations relevant to tasks * Safe and Correct Operation of Tools and Equipment * Health Orientations/trainings * Prevention and Control of OSH Hazards in the workplace * Chemical Handling * Safety Trainings * Prevention and Control of Work-related Injuries and Illness * Basic First-aid Trainings * Emergency Response Trainings * Trainings on use of fire-extinguisher |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Knowledge management
* Collaborating
* Interpersonal
* Troubleshooting
* Critical thinking
* Observation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* General OSH principles and legislations
* Principles of good housekeeping (5S)
* Company/workplace policies/ guidelines
* Standards and safety requirements of work process and procedures
* Standard Workplace emergency plan and procedures
* Safety and health requirements of tasks
* Workplace guidelines on providing feedback on OSH and security concerns
* OSH regulations
* Hazard control procedures
* OSH trainings relevant to work

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1. Assessment requires evidence that the candidate: 2. Arranged work area and items in accordance with 3. workplace procedures requirements 4. Followed work standards and procedures based on instructions 5. Applied ***Prevention and control measures*** based on instructions 6. Undertook orientations on ***OSH requirements and regulations*** in line with policy. 7. Provided feedback on occupational health and safety as per workplace instructions. 8. Adhered to workplace procedures for reporting hazards, incidents, injuries and sickness to as per workplace policy. 9. Identified and proposed ***OSH-related training needs*** as per workplace policy. |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# COMMON UNITS OF COMPETENCY

# APPLY BASIC MATHEMATICS

**UNIT CODE: CON/OS/CAJ/CC/01/4/A**

**UNIT DESCRIPTION:**

This unit describes the competencies required in applying basic mathematics in carpentry and joinery. It involves applying algebra, applying trigonometry, performing geometrical calculations, carrying out mensuration, applying statistics and applying linear graphs.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.(***Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| * 1. Apply Algebra | * 1. Performed calculations involving Indices as per the concept   2. Represented linear equations based on the concept   3. Scientific calculator is used in solving mathematical problems in line with manufacturer’s manual   4. Simultaneous equations are performed as per the rules   5. Solved simple algebraic equations as per the concept   6. Form simple algebraic equations as per the concept |
| * 1. Apply Trigonometry | * 1. Calculations are performed using trigonometric rules   2. Applied trigonometric rules as per the concept |
| * 1. Perform geometrical calculations | * 1. Calculated areas of figures as per the given formulae   2. Apply Pythagoras’ theorem based on the concept |
| * 1. Carry out Mensuration | * 1. Identified various ***units of measurements*** as per the course requirements   2. Converted units from one form to another   3. Perimeter and areas of ***figures*** are obtained as per the correct formulae   4. Volume and of Surface area of solids are obtained   5. Area of irregular figures are obtained |
| * 1. Apply Statistics | 1. Identified grouped and ungrouped data 2. Organized ungrouped data as per the concept 3. Represented data in frequency tables 4. Calculated the median of grouped and ungrouped data 5. Represented data in a chart form 6. Interpreted data from a given chart |
| * 1. Apply linear graphs | 1. Plot a ***linear graph*** for given set of data 2. Read and used information from a given linear graph |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Units of measurement may include but not limited to: | * + Millimetres   + Centimetres   + Metres   + Kilometres |
| 1. Figures may include but not limited to: | * + square   + rectangle   + triangle   + polygons   + circles |
| 1. Linear graphs may include but not limited to: | * + Distance against time   + Temperature against time   + Velocity against distance |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Applying fundamental operations (addition, subtraction, division, multiplication)
* Using and applying mathematical formulas
* Logical thinking
* Problem solving
* Applying statistics
* Drawing graphs
* Using different measuring tool

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Fundamental operations (addition, subtraction, division, multiplication)
* Calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Rounding techniques
* Types of fractions
* Types of tables and graphs
* Presentation of data in tables and graphs

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Demonstrated ability to apply Trigonometry as per the concept 2. Was able to carry out mensuration 3. Performed Simultaneous equations as per the rules 4. Solved simple algebraic equations as per the concept 5. Demonstrated knowledge of Applied statistics 6. Applied linear graphs correctly |
| 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Measuring equipment   3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Direct Observation 2. Demonstration with Oral Questioning 3. Written tests |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PREPARE AND INTERPRET TECHNICAL DRAWINGS

**UNIT CODE: CON/OS/CAJ/CC/02/4/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to prepare and interpret technical drawings. It involves competencies to select, use and maintain drawing equipment and materials. It also involves producing plain geometry drawings, solid geometry drawings, pictorial and orthographic drawings

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  ***(Bold and italicised terms are elaborated in the Range)*** |
| --- | --- |
| 1. Select, use, and maintain drawing equipment and materials | 1.1 ***Drawing equipment*** are identified and gathered according to task requirements  1.2 ***Drawing materials*** are identified and gathered according to task requirements  1.3 Drawing equipment are used and maintained as per manufacturer’s instructions  1.4 Drawing materials are used as per workplace procedures  1.5 Waste materials are disposed in accordance with workplace procedures and ***environmental legislations***  1.6 ***Personal Protective Equipment*** is used according to occupational safety and health regulations |
| 1. Produce plane geometry drawings | 2.1 Different types of lines used in drawing and their meanings are identified according to standard  drawing conventions  2.2 Different types of ***geometric forms*** are constructed according to ***standard conventions***  2.3 Different types of angles are constructed according to principles of trigonometry  2.4 Different types of angles are measured using appropriate measuring tools  2.6 Angles are bisected according to standard conventions  2.7 Freehand sketching of different types of geometric forms, tools, equipment, diagrams is conducted |
| 1. Produce solid geometry drawings | 3.1 Drawings of patterns are interpreted according to standard conventions  3.2 Developed surfaces of truncated and un truncated regular solids |
| 1. Produce orthographic and pictorial drawings | 4.1 Symbols and abbreviations are identified and their meaning interpreted according to standard drawing conventions  4.2 First and third angle orthographic drawings are interpreted and produced in accordance with the standard conventions  4.3 Orthographic elevations are dimensioned in accordance with standard conventions  4.4 Isometric drawings are interpreted and produced in accordance with standard conventions  4.5 Oblique drawings are interpreted as per standard conventions |

**RANGE**

| **Variable** | **Range** |
| --- | --- |
| 1. Drawing equipment may include but is not limited to: | * Drawing boards * T and set squares * drawing sets, |
| 1. Drawing materials may include but is not limited to: | * Drawing papers * Pencils * Erasers * masking tapes * paper clips |
| 1. Environmental legislations may include but is not limited to: | * EMCA 1999 |
| 1. Personal Protective Equipment may include but is not limited to: | * Dust coats * closed leather shoes |
| 1. Geometric forms may include but is not limited to: | * Circles * Triangles * Rectangles * Parallelogram * Polygons * Pyramids * conic sections * prisms, loci |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Critical thinking
* Drawing
* Interpretation
* Drawing equipment handling
* Communication
* Interpersonal

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Drawing equipment and materials
* Freehand sketching
* Lettering
* Geometrical constructions
* Types of drawings
* Types of lines
* Isometric drawing conventions, features, characteristics, components
* Orthographic drawing conventions, features, characteristics, components
* Sketches and drawings of simple patterns

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and understanding and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Selected, used, and maintained drawing equipment and materials appropriately 2. Was able to produce plain geometry drawings 3. Conducted freehand sketching of different types of geometric forms, tools, equipment, diagrams 4. Produced solid geometry drawings 5. Developed surfaces of truncated and un truncated regular solids 6. Produced pictorial and orthographic drawings correctly |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Measuring equipment 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical tests   2. Observation |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# APPLY SCIENCE

**UNIT CODE: CON/OS/CAJ/CC/03/4/A**

**UNIT DESCRIPTION**

This unit describes the competence in applying science. It involves applying units and measurements, applying force, work, energy and power, applying friction, applying light and sound, applying Linear motion, applying general chemistry, applying primary and secondary cells, applying thermal properties of matter and applying pressure in fluids

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  ***(Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| 1. Apply units and measurements | * 1. Selected appropriate units of measurements as per the given task   2. Converted units from one form to another as required by the task |
| 1. Apply Force, work, energy and power | * 1. Defined force, work, energy and power   2. Described forms of energy (K.E &P. E) based on the state of the matter   3. Solved simple calculations on work, energy and power as per the task requirements |
| 1. Apply Friction | * 1. Defined meaning and causes of friction   2. Identified the advantages and disadvantages of friction   3. Solved simple problems on friction as per task requirements   4. Identified application of friction in construction as per task requirements |
| 1. Apply Light and sound | * 1. Identified ***sources of light*** and sound   2. Applied laws of reflection and refraction   3. Identified types of images formed by plane and curved mirrors   4. Identified primary and secondary colours   5. Mixed two or more colours to form other colours   6. Solved simple calculations of location of images formed by plane and curved mirrors   7. Determined velocity of sound in air   8. Identified the properties of sound |
| 1. Apply Linear motion | * 1. Defined and performed simple calculations on distance, displacement, speed, acceleration, velocity, scalar and vector |
| 1. Apply General chemistry | * 1. Applied the knowledge of experimental techniques correctly and safely   2. Stated the ***classification of matter***   3. Identified the structure of atoms   4. Identified properties of elements and compounds, acids and bases   5. Described how given alloys are made   6. Identified magnetic and non-magnetic materials   7. Identified ***sources of electricity*** and causes of electric currents |
| 1. Apply electrolysis | * 1. Identified the process of electrolysis   2. Applied the electrolysis process |
| 1. Apply thermal properties of matter | 1. Identified ***sources of heat*** 2. Identified the effects of heat on matter 3. Described ***methods of heat transfer*** |
| 1. Apply pressure in fluids | * 1. Defined density and variation of pressure   2. Described laws of floatation   3. Performed simple calculations on pressure in liquids |

**Range**

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of light may include but is not limited to: | * Natural sources of light * Artificial sources of light |
| 1. Classification of matter may include but is not limited to: | * Solids * Liquids * Gases |
| 1. Sources of electricity may include but is not limited to: | * Renewable * Non-renewable |
| 1. Sources of heat may include but is not limited to: | * Solar * Biomass * Geothermal * Fossil fuel |
| 1. Methods of heat transfer may include but is not limited to: | * Conduction * Convection * Radiation |

**REQUIRED KNOWLEDGE**

* Construction materials
* Scientific knowlwdge in area of specialization
* Friction
* Basic electricity
* Force, work, energy and power
* Metals and alloys
* Moments of force
* Magnetism
* Elements and compounds

**SKILLS**

* Solving problems
* Scientific calculations
* General calculations

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Applied units and measurements correctly   2. Was able to apply Force, work, energy and power   3. Applied Friction   4. Applied Light and sound   5. Applied Linear motion   6. Demonstrated knowledge of general chemistry   7. Applied electrolysis   8. Applied thermal properties of matter   9. Demonstrated ability of applying pressure in fluids |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Measuring equipment 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written text 2. Interview 3. Observation |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CONSTRUCT TEMPORARY WORKS

**UNIT CODE: CON/OS/CAJ/CC/04/4/A**

**UNIT DESCRIPTION**

This unit describes the competencies required to construct temporary works. It involves constructing and dismantling trench timbering, constructing and dismantling building formwork/shuttering, erecting, and dismantling scaffold, constructing and dismantling building shores,

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| --- | --- |
| 1. Construct and dismantle trench timbering | * 1. Personal protective equipment is selected, fitted and used according to safety rules and regulations   2. ***Trench timbering materials and tools*** are determined according to the construction rules and regulations   3. Trench timbering is constructed as per ***soil type*** and site topography   4. Trench timbering is dismantled according to site procedures and critical structural safety requirements   5. Performed housekeeping practices as per work place procedures |
| 1. Construct and dismantle building formwork/shuttering | * 1. Personal protective equipment is selected, fitted and used according to safety rules and regulations   2. Formwork dimensions are determined as per the structural elements to be supported   3. ***Formwork material*** is identified as per structure complexity, job drawings or supervisor instructions   4. ***Formwork type*** is erected according to the structural element to be cast   5. Oiling of timber formwork surface is carried out for easy dismantling after concrete setting   6. Formwork is fixed into position in accordance with the construction rules and regulations   7. Formwork is dismantled according to site procedures and critical structural safety requirements   8. Performed housekeeping practices after construction of formwork/shuttering as per workplace procedures |
| 1. Erect and dismantle building scaffold | * 1. ***Personal protective equipment*** is selected, fitted and used according to safety rules and regulations and job specifications   2. ***Scaffold system*** is determined as per complexity of the building, engineering design, job drawings or supervisor instructions   3. Scaffolds are erected according to plan based on safe work practices and engineers’ specifications   4. Scaffolds are inspected and commissioned as per the engineering specifications   5. Scaffolds are dismantled according to engineers’ specifications, site procedures and critical structural safety requirements   6. Site cleaned and cleared of all tools, excess material and waste |
| 1. Erect and dismantle building shores | * 1. Personal protective equipment is selected, fitted and used according to safety rules and regulations   2. ***Shoring materials*** are selected according to the construction rules and regulations   3. ***Type of shore*** is selected according to the nature of the work   4. Shoring is erected as per site conditions and building construction rules and regulations   5. Shoring is inspected and commissioned as per the engineer’s specifications   6. Shoring is dismantled according to site procedures and critical structural safety requirements   7. Housekeeping practices are performed according to workplace procedures |

**Range**

| **Variable** | **Range** |
| --- | --- |
| 1. Scaffold system may include but is not limited to: | * Dependent * Independent |
| 1. Personal protective equipment may include but is not limited to: | * Helmets * Safety boots * Gloves * Overall * Reflectors |
| 1. Formwork material may include but is not limited to: | * Timber * Metal plates * Plastic |
| 1. Formwork type may include but is not limited to: | * Column formwork * Beam formwork * Floor formwork * Wall formwork * Permanent formwork |
| 1. Trench timbering materials and tools may include but is not limited to: | * Timber * Hammer * Metal plates * Pliers * Nails * Binding wires |
| 1. Soil type may include but is not limited to: | * firm soil * Loose soil * Waterlogged soil |
| 1. Type of shore may include but is not limited to: | * Raking/Inclined shore * Flying/horizontal shore * Dead/vertical shore |
| 1. Shoring materials may include but is not limited to: | * timber * steel tubes * Bolts and nuts * Screws |

**REQUIRED KNOWLEDGe and SKILLS**

**knowledge**

* Measurement
* Formwork
* Scaffolding
* Soil properties
* Wall construction
* Trench excavation
* Basic arithmetic
* Technical drawings

**Skills**

* Measurement skills
* Basic mathematic skills
* Reading skills
* Communication skills
* Construction tools handling skills
* Technical drawing skills

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Was able to erect and dismantle building scaffolds   2. Constructed and dismantled building formwork/shuttering   3. Constructed and dismantled trench timbering   4. Erected and dismantled building shores appropriately   5. Observed occupational health and safety procedures to create a safe working environment |
| 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace or appropriately simulated environment where assessment can take place   2. Measuring equipment   3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical assignment   2. Written   3. Oral interview   4. Demonstrations |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CORE UNITS OF COMPETENCIES

# CONSTRUCT DOORS & DOOR FRAMES

**UNIT CODE : CON/OS/CAJ/CR/01/4/A**

**UNIT DESCRIPTION**

This unit describes the competence required to construct doors and door frames. It involves interpreting working drawing, preparing construction materials, marking out product profile, cutting out product profile and performing fixing of the joints. It also includes performing finishing processes, examining quality of the finished product and performing workplace housekeeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENTS**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  *(Bold terms are elaborated in the Range)* |
| --- | --- |
| 1. Interpret working drawing | 1. Working drawing interpreted based on architectural design 2. Measurements converted as required 3. Symbols are identified and interpreted based on International technical drawing (ISO 128) 4. Door opening identified as per the building code 5. Sketched and labelled types of battened door as per the type of the door 6. Sketched and labelled types of panelled and flush doors as per the type of door |
| 1. Prepare Construction materials | 1. Cutting list of materials prepared as per the working drawing 2. ***Materials, tools and equipment*** selected and prepared as per the working drawing |
| 1. Marking out product profile | 1. Marking tools are identified as per the job requirements 2. Marking is carried out according to the working drawing 3. Safety is observed during marking out as per job requirements |
| 1. Cut out product profile | 1. Cutting out tools identified as per the job requirements 2. Cutting out is carried out as per the working drawing 3. Safety is observed during cutting out as per job requirements 4. Housekeeping practices are performed after cutting out product profile as per workplace procedures |
| 1. Perform fixing of the joints | 1. Trial fitting is done as per the working drawing specifications 2. Final assembling of the door done as per the working drawing specification 3. Door fixed in frame as per the drawing specification 4. Safety is observed during fixing of the joints |
| 1. Perform finishing processes | 1. Scrapping is performed as per job requirement 2. Sanding is done as per the job requirements 3. Staining conducted according to job requirement 4. Painting/ varnishing performed based on the manufacturer’s instructions |
| 1. Examine quality of the finished product | 1. Examined finished product as per ISO 17637 and ISO 5817 standards 2. Recorded quality check results as per the workplace procedures |
| 1. Perform workplace housekeeping | 1. Housekeeping is conducted as per workplace procedures |

**RANGE**

| **Variable** | **Range** |
| --- | --- |
| 1. Materials may include but is not limited to: | * + Hard wood   + Soft wood   + Manufactured boards   + Iron mongery |
| 1. Tools & equipment may include but is not limited to: | * + Planes   + Square   + Saws   + Chisel saws   + Claw hammer   + Mallet   + Tape measure   + Screw driver |

**REQUIRED KNOWLEDGE and SKILLS**

**Knowledge**

* Construction dimensions
* Architectural drawing
* Local authority by-laws
* Building code
* Structural elements
* Codes of practice
* Basic arithmetic
* Measurement
* Building drawing
* Types of doors
* Methods of finishing processes
* Marking and cutting tools and equipments

**Skills**

* Measurement
* Basic arithmetic
* Design
* Computer literacy
* planning

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Interpreted working drawing correctly   2. Prepared construction materials appropriately   3. Marked out a product profile accurately   4. Cut out product profile suitably   5. Was able to perform fixing of the joints   6. Performed finishing processes accordingly   7. Examined quality of the finished product   8. Performed workplace housekeeping procedures as per workplace procedures |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Demonstration   2. Practical assignment/project   3. Interview/Oral Questioning   4. Written |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the carpentry and joinery sector workplace and job role is recommended. |

# CONSTRUCT WINDOWS & WINDOW FRAMES

**UNIT CODE: CON/OS/CAJ/CR/02/4/A**

**UNIT DESCRIPTION**

This unit describes the competencies required to construct windows and window frames. It involves interpreting working drawing, preparing construction materials, marking out product profile, cutting out product profile and performing fixing of the joints. It also includes performing finishing processes, examining quality of the finished product, and performing workplace housekeeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| --- | --- |
| 1. Interpret working drawing | 1. Working drawing interpreted based on architectural design 2. Measurements converted as required 3. Symbols are identified and interpreted based on International technical drawing (ISO 128) 4. Window opening identified as per the Building code. 5. Sketched and labelled types of window as per the type of the window |
| 1. Prepare Construction materials | 1. Identified functions of windows as per the working drawing 2. Identified ***types of windows*** as per the working drawing 3. Cutting list of materials prepared as per the working drawing 4. ***Materials, tools and equipment*** selected and prepared as per the working drawing |
| 1. Marking out product profile | 1. Marking tools are identified as per the job requirements 2. Marking is carried out according to the working drawing 3. Safety is observed during marking out as per the factories act |
| 1. Cut out product profile | 1. Cutting out tools identified as per the job requirements 2. Cutting out is carried out as per the working drawing 3. Safety is observed during cutting out product profile as per the factories act 4. Housekeeping practices are performed according to workplace procedures |
| 1. Perform fixing of the joints | 1. Trial fitting is done as per the working drawing specifications 2. Final assembling of the window done as per the working drawing specification 3. Window fixed in frame as per the drawing specification 4. Safety is observed during fixing of the joints |
| 1. Perform finishing processes | 1. Scrapping is performed as per job requirement 2. Sanding is done as per the job requirements 3. Staining conducted according to job requirement 4. Painting and varnishing performed based on the manufacturer’s instructions |
| 1. Examining quality of the finished product | 1. Examined finished product as per ISO 17637 and ISO 5817 standards 2. Recorded quality check results as per the work place procedures |
| 1. Performing workplace housekeeping. | 1. ***Housekeeping*** is conducted as per workplace procedures |

**RANGE**

| **Variable** | **Range** |
| --- | --- |
| 1. Tools & equipment may include but is not limited to: | * Planes * Square * Saws * Chisel saws * Claw hammer * Mallet * Tape measure * Screw driver |
| 1. Types of windows may include but is not limited to: | * Top hung * Side hung * Simple louvres |
| 1. Housekeeping may include but is not limited to: | * Cleaning * Clearing * Keeping workplace tidy |

**REQUIRED KNOWLEDGe and SKILLS**

**knowledge**

* Construction dimensions
* Architectural drawing
* Local authority by-laws
* Building code
* Structural elements
* Codes of practice
* Basic arithmetic
* Measurement
* Building drawing

**Skills**

* Measurement
* Basic arithmetic
* Design
* Computer literacy
* planning

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Interpreted working drawing correctly 2. Prepared construction materials 3. Marked out product profile accurately 4. Cut out product profile appropriately 5. Was able to perform fixing of the joints 6. Performed finishing processes 7. Examined quality of the finished product 8. Performed workplace housekeeping according to workplace procedures |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical assignment   2. Written   3. Oral interview   4. Demonstrations |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CONSTRUCT FURNITURE ITEMS

**UNIT CODE: CON/OS/CAJ/CR/03/4/A**

**UNIT DESCRIPTION**

This unit describes the competences required to construct furniture items. It involves interpreting working drawing, preparing construction materials, marking out product profile, cutting out product profile and performing fixing of the joints. It also includes performing finishing processes, examining quality of the finished product and performing workplace housekeeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| --- | --- |
| 1. Interpret working drawing | 1. Working drawing is interpreted based on given furniture 2. Measurements are converted as required by the working drawing 3. Symbols are identified and interpreted based on International technical drawing (ISO 128) |
| 1. Prepare construction materials | 1. Identified types of furniture as per working drawing 2. Cutting list of materials is prepared as per the working drawing 3. ***Materials***, ***tools,*** and equipment are selected and prepared as per the working drawing |
| 1. Marking out product profile | 1. Marking tools are identified as per the job requirements 2. Marking is carried out according to the working drawing 3. Safety and health is observed during marking out according to job requirements |
| 1. Cut out product profile | 1. Cutting out tools are identified as per the job requirements 2. Cutting out is carried out as per the working drawing 3. Safety is observed during cutting out according to job requirements |
| 1. Perform fixing of the joints | 1. Trial fitting is done as per the working drawing specifications 2. Final assembling of the furniture is done as per the working drawing specification 3. Safety is observed during fixing of the joints |
| 1. Perform finishing processes | 1. Scrapping is performed as per job requirement 2. Sanding is done as per the job requirements 3. Staining is conducted according to job requirement 4. Painting/ varnishing is performed based on the manufacturer’s instructions |
| 1. Examining quality of the finished product | 1. Examined finished product as per ISO 17637 and ISO 5817 standards 2. Recorded quality check results as per the workplace procedures |
| 1. Performing workplace housekeeping. | 1. ***Housekeeping*** is conducted as per workplace procedures |

**RANGE**

| **Variable** | **Range** |
| --- | --- |
| 1. Materials may include but is not limited to: | * Plywood * Fibreboard * Block board * soft board |
| 1. Tools may include but is not limited to: | * Marking tools * Measuring and testing tools * Driving tools * Boring tools * Cutting tools * Planning and shaping tools * Setting out tools |
| 1. Housekeeping may include but is not limited to: | * Cleaning * Clearing * Keep workplace tidy |

**REQUIRED KNOWLEDGE**

* Types of timber
* Simple arithmetic calculations
* Carpentry and joinery tools
* Types of timber
* Furniture construction
* Construction dimensions
* Architectural drawing
* Examples of furniture items

**SKILLS**

* Interpret working drawing
* Communication skills
* Design
* Computer literacy
* Planning
* Enterpreneurship skills

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Interpreted working drawing 2. Prepared construction materials 3. Marked out product profile accurately 4. Cut out product profile appropriately 5. Performed fixing of the joints 6. Performed finishing processes neatly 7. Examined quality of the finished product 8. Performed workplace housekeeping according to job requirements |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written Test 2. Demonstration 3. Practical assignment 4. Interview/Oral Questioning |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the building sector, workplace and job role is recommended. |

# CONSTRUCT & ERECT ROOF STRUCTURES

**UNIT CODE: CON/OS/CAJ/CR/04/4/A**

**UNIT DESCRIPTION**

This unit describes the competence in constructing and erecting roof structures. It involves interpreting architectural/structural drawings, setting out roof trusses, cutting out the joints, assembling of truss members and erecting roof trusses. It also includes performing fixing of purlins, performing trimming of roof members, fixing roof covering materials, performing finishing at the eaves and other finishing processes

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| --- | --- |
| 1. Interpret Architectural/structural drawings | 1. Working drawing interpreted based on architectural design 2. Measurements converted as required by the working drawing 3. Symbols are identified and interpreted based on International technical drawing (ISO 128) 4. Sketched and labelled types of roof as per the working drawing 5. Identified ***type of roof*** as per the architectural/structural drawing |
| 1. Set out roof trusses | 1. Secured tie with pegs according to job requirement 2. Marked the center of the truss according to architectural/structural design 3. Marked the span of the building based on the architectural/structural drawing 4. Marked the king post as per the architectural drawing 5. Made plumb cuts on rafters as per the pitch specifications 6. Joined the ***truss members*** as per architectural drawing 7. Fixed ties and braces according to the architectural/structural drawing 8. Safety is observed during setting out of roof trusses |
| 1. Cut out the joints | 1. Selected tools and eq1uipment for cutting out as per job requirements 2. Cut out the joints as per job requirements |
| 1. Assemble of truss members | 1. Constructed heads of the two rafters as per truss design specifications 2. Joined rafters to the ties based on truss design specification 3. Constructed king post to the ties and rafters as per truss design specification 4. Joined braces to rafters according to truss design specification 5. Fixed struts and braces to ties and rafters based on truss design specification |
| 1. Erect roof trusses | 1. Identified types of trusses as per the architectural drawing 2. Placed the truss on the wall plate as per job requirements 3. plumbed first truss on the wall and fixed it to the wall plate based on job requirement 4. Plumbed the rest of the trusses temporarily on the wall plate as per the job requirement 5. Safety is observed during erection of roof trusses according to job requirements |
| 1. Perform fixing of purlins | 1. Cut splice joint on the purlins as per selected roofing material 2. Fixed the purlins on the rafters according to the roof covering material 3. Trimmed purlin according to eaves details |
| 1. Perform trimming of roof members | 1. ***Roof members are*** identified as per the selected roof covering materials 2. Trimmed the roof members according to the structural drawing |
| 1. Fix roof covering material | 1. Selected ***roof covering materials*** according to design specifications 2. Fixed the covering material with appropriate devices |
| 1. Perform finishing at the eaves | 1. ***Eaves*** defined as per structural design 2. Identified the types of eaves based on structural design 3. Measured the sizes of eaves as per job requirement 4. Marked the plumb cuts based on the measured sizes 5. Cut the eaves plumb as marked |
| 1. Perform finishing processes | * 1. Cut and fixed the fascial board according to workplace procedures   2. Cut and fixed the soffits based on job requirements   3. Fixed the gutters and the down pipes as per |

**Range**

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Types of roofs may include but is not limited to: | * Gabled * Hipped   Lean to |
| 1. Truss members may include but is not limited to: | * Rafters * Braces * Struts * Ties * Ridge board |
| 1. Roof members may include but is not limited to: | * Beams * purlins * wall plate * ridge plate * hip rafter * valley rafter * battens * reapers |
| 1. Roof covering materials may include but is not limited to: | * Thatch covering * Wood shingles * Tiles * Asbestos cement sheets * Galvanized corrugated Iron sheets |
| 1. Eaves may include but is not limited to: | * Flush * Open * Closed * Sprocket |

**REQUIRED KNOWLEDGE**

* Construction Material
* Joinery Tools And Equipment
* Site Management
* Safety rules and precautions
* Roof covering materials
* Roof members
* Truss members
* Types of eaves

**SKILLS**

* Communication skills
* Using carpentry and joinery tools and equipments
* Observing safety

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Interpreted Architectural/structural drawings correctly 2. Set out roof trusses 3. Observed accuracy during cutting out the joints appropriately 4. Assembled truss members correctly 5. Erected roof trusses appropriately 6. Performed fixing of purlins 7. Was able to trim roof members accurately 8. Fixed roof covering material neatly 9. Performed finishing at the eaves 10. Performed finishing processes as per workplace procedures |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written text 2. Interview 3. Observation 4. Practical tests |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PERFORM JOINERS SECOND FIXING

**UNIT CODE: CON/OS/CAJ/CR/05/4/A**

**UNIT DESCRIPTION**

This unit describes the competencies required to perform joiners second fixing. It involves, interpreting architectural drawings, selecting materials, tools and equipment, performing fixing of the fixtures, examining the quality of the finished product and performing housekeeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| --- | --- |
| 1. Interpret architectural drawings | 1. Architectural drawing interpreted based on architectural design 2. Measurements converted as required by the Architectural drawing 3. Symbols are identified and interpreted based on International technical drawing (ISO 128) |
| 1. Select materials, tools, and equipment | 1. Cutting list of materials prepared as per the working drawing 2. Materials, tools and equipment selected and prepared as per the workplace procedures |
| 1. Perform fixing the fixtures | 1. Prepared materials for ***fixtures*** as per the workplace procedures 2. Plugged in the wall based on the job requirements 3. Cut the joints as per the job requirements 4. Undertook fixing of the fixtures according to the interior designer’s specifications 5. Undertook finishing processes as per the job requirements 6. Performed workplace housekeeping as per the workplace procedures |
| 1. Examine the quality of the finished product | 1. Examined ***joints*** for well-fitting and tightness 2. Examined finished product for protruding nails or screws 3. Examined head of the screws |
| 1. Perform workplace housekeeping | 1. Cleared the off cuts, saw dust, shavings as per job requirements 2. Collected remaining nails and screws as per job requirements 3. Return all the tools in the tool store as per workplace procedures |

**Range**

| **Variable** | **Range** |
| --- | --- |
| 1. Fixtures may include but is not limited to: | * Skirting * Dado rail * Picture rail * Cornice * Arch trough * Pelmet box |
| 1. Joints may include but is not limited to: | * Mitre * Butt * Scribed |

**REQUIRED KNOWLEDGe and SKILLS**

**knowledge**

* Fixing of nails and screws
* Finishing procedures
* Types of fixtures
* Types of joints

**Skills**

* Accuracy in cutting of the joints
* Planning skills
* Moulding skills
* Fitting skills
* Preparing materials, tools and equipment

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Interpreted architectural drawings accurately 2. Prepared a good cutting list of materials as per the working drawing 3. Selected materials, tools and equipment 4. Performed fixing of the fixtures appropriately 5. Examined joints for well-fitting and tightness accurately 6. Examined finished product for protruding nails or screws accurately 7. Examined head of the screws 8. Performed workplace housekeeping according to wor place procedures |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical assignment   2. Written   3. Oral interview |
| 1. Context of Assessment | Competency may be assessed  4.1 On-the-job  4.2 Off-the –job  4.3 During Industrial attachment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CONSTRUCT TIMBER FLOORS AND PREFABRICATED BUILDINGS

**UNIT CODE: CON/OS/CAJ/CR/06/4/A**

**UNIT DESCRIPTION**

This unit describes the competences required to construct timber floors and prefabricated buildings. It entails interpreting structural drawing, selecting materials, tools and equipment, setting and constructing timber prefabricated structures, constructing timber floors and performing finishing activities.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** | **PERFORMANCE CRITERIA**  *(Bold and italicized terms are elaborated in the Range)* |
| --- | --- |
| 1. Interpret structural drawing | 1.1 Architectural/structural drawing interpreted based on building code  1.2 Measurements converted as required by the Architectural drawing  1.3 Symbols are identified and interpreted based on International technical drawing (ISO 128) |
| 1. Select materials, tools and equipment | 2.1 Cutting list of materials prepared as per the working drawing  2.2 Materials, tools and equipment selected and prepared as per the work place procedures  2.3 Exercised safety during handling of tools and equipment as per factories act  2.4 Observed safety during use of materials, tools and equipment |
| 1. Set and construct timber prefabricated structures | 1. ***Prefabricated structures*** identified as per the building code 2. Selected setting out materials, tools and equipment according to the job requirements 3. Set angles of the building as per the structural drawing 4. Set out the prefabricated structure as per the engineer’s specifications 5. Constructed the prefabricated panels based on the structural drawing 6. Transported the prefabricated panels to the site as per the owner’s specifications 7. Joined and assembled the panels as per the structural drawing 8. Treated the panels with ***wood preservatives*** and fire retardants according to job requirements |
| 1. Construct timber floors | 1. Interpreted working drawing based on the architectural/ structural drawing specifications 2. Prepared material cutting list as per the working drawing 3. Prepared the materials, tools and equipment as per the job requirements 4. Set the timber floor as per the engineer’s instructions 5. Applied suitable wood preservatives and fire retardants as per the job requirements |
| 5. perform finishing activities. | 1. Performed sanding as per the job requirements 2. Applied a coat of varnish as per the job requirements 3. Perform workplace housekeeping procedures as per work place procedures 4. Disposed waste as per the environment regulations |

**Range**

|  |  |
| --- | --- |
| **Variable** | **Range** |
| * Prefabricated structures may include but is not limited to: | * Timber building |
| * Wood preservatives may include but is not limited to: | * Oil borne * Water borne * Metallic salts |

**REQUIRED KNOWLEDGE**

* Basic calculations
* Selection of materials
* Various types of timber
* Joining materials

**SKILLS**

* Interpretation of working drawing
* Handling of tools and equipments
* Measuring, cutting, marking skills

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Interpreted structural drawing accurately 2. Prepared a good cutting list of materials as per the working drawing 3. Selected materials, tools and equipment appropriately 4. Set and constructed timber prefabricated structures 5. Erected the timber prefabricated structure 6. Constructed timber floors 7. Was keen to observe safety during construction of timber floors 8. Performed finishing activities. 9. Performed housekeeping according workplace procedures |
| 1. Resource Implications | The following resources should be provided:  2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place  2.2 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written Test   2. Demonstration   3. Practical assignment   4. Interview/Oral Questioning |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |