

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**OIL PIPELINE LABARATORY TECHNOLOGY**

**LEVEL 5**



 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 blue print and sustainable development goals.

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

These reforms demand that industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these National occupational Standards were developed for the purpose of developing a competency-based curriculum for Oil Pipeline laboratory technology 5. These Occupational Standards will also be the bases for assessment of an individual for competence certification.

It is my conviction that these National occupational Standards will play a great role towards development of competent human resource for the Oil and Gas sector’s growth and sustainable development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

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

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

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Oil and Gas Sector Skills Advisory Committee (SSAC), have developed these National Occupational Standards for an Oil pipeline laboratory technician. These standards will be the bases for development of competency-based curriculum for Oil and Pipeline Labaratory technology Level 5. These Standards will also be the bases for assessment of an individual for competence certification.

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, Oil and Gas SSAC, expert workers and all those who participated in the development of these occupational standards.

**Prof. CHARLES M. M. ONDIEKI, PhD, FIET (K), Con. EngTech.**

**CHAIRMAN, TVET CDACC**

# ACKNOWLEDGEMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am sincerely 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 (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to the Oil and Gas 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 institutions which in one way or another contributed to the development of these Standards.

**CHAIRMAN**

**OIL AND GAS SECTOR SKILLS ADVISORY COMMITTEE**

# ACRONYMNS

BC Basic Competency

CBET Competency Based Education and Training

CC Common Competency

CDACC Curriculum Development Assessment and Certification Council

CR Core Competency

CU Curriculum

EMCA Environmental Management and Coordination Act

KCSE Kenya Certificate of Secondary Education

KNQA Kenya National Qualifications Authority

MoE Ministry of Education

NGO Non-Governmental Organization

OS Occupational Standards

LT Labaratory technology

OG Oil and Gas

OSHA Occupation Safety and Health Act

PPE Personal Protective Equipment

SSAC Sector Skills Advisory Committee

TVET Technical and Vocational Education and Training

TVET CDACC TVET Curriculum Development Assessment and Certification Council

SP Salt Processing

# KEY TO UNIT CODE

 OG/OS /LT/BC /01/4 / A

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

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**OVERVIEW**

Oil and Gas Labaratory Level 4 qualification consists of competencies that a person must achieve to enable him/her to test ground and jet A-1 fuels, determine Petroleum Product Movement Quality requirements, perform Quality Control Jet A-1 Fuel Handling and perform Laboratory Processes Quality Assurance

The units of competency comprising this qualification include the following basic, common and core competencies:

**Basic Units of Competency**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| OG/OS/LT/BC/01/4 | Demonstrate communication skills |
| OG/OS/LT/BC/02/4 | Demonstrate numeracy skills |
| OG/OS/LT/BC/03/4 | Demonstrate digital literacy |
| OG/OS/LT/BC/04/4 | Demonstrate entrepreneurial skills |
| OG/OS/LT/BC/05/4 | Demonstrate employability skills |
| OG/OS/LT/BC/06/4 | Demonstrate environmental literacy |
| OG/OS/LT/BC/07/4 | Demonstrate occupational safety and health practices |

**Core Units of Competency**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| OG/OS/LT/CR/01/4 | Maintain salt evaporation ponds  |
| OG/OS/LT/CR/02/4 | Perform salt washing operations  |
| OG/OS/LT/CR/03/4 | Perform salt drying  |
| OG/OS/LT/CR/04/4 | Perform salt grinding  |
| OG/OS/LT/CR/05/4 | Perform salt packaging  |
| OG/OS/LT/CR/06/4 |  |
| OG/OS/LT/CR/07/4 |  |
| OG/OS/LT/CR/08/4 |  |
| OG/OS/LT/CR/09/4 |  |

**BASIC UNITS OF COMPETENCY**

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE: OG/OS/LT/BC/01/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate discussion with groups and contribute to the development of communication strategies.

**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. Meet communication needs of clients and colleagues
 | 1. Specific communication needs of clients and colleagues are identified and met
2. Different approaches are used to meet communication needs of clients and colleagues
	1. Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization
 |
| 1. Contribute to the development of communication strategies
 | * 1. Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as required
	2. Channels of communication are established and reviewed regularly
	3. Coaching ineffective communication is provided
	4. Work related network and relationship are maintained as necessary
	5. Negotiation and conflict resolution strategies are used where required
	6. Communication with clients and colleagues is appropriate to individual needs and organizational objectives
 |
| 1. Conduct interviews
 | 1. A range of appropriate communication strategies are employed in ***interview situations***
2. Records of interviews are made and maintained in accordance with organizational procedures
	1. Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated
 |
| 4. Facilitate group discussions | 1. Mechanisms which enhance effective group interaction is defined and implemented
2. Strategies which encourage all group members to participate are used routinely
3. Objectives and agenda for meetings and discussions are routinely set and followed
4. Relevant information is provided to group to facilitate outcomes
5. Evaluation of group communication strategies is undertaken to promote participation of all parties
	1. Specific communication needs of individuals are identified and addressed
 |
| 1. Represent the organization
 | 1. When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization
2. Presentation is clear and sequential and delivered within a predetermined time
3. Utilize appropriate media to enhance presentation
4. Differences in views are respected
5. Written communication is consistent with organizational standards
	1. Inquiries are responded in a manner consistent with organizational standard
 |

**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** |
| Communication strategiesinclude but not limited to: | * Language switch
* Comprehension check
* Repetition
* Asking confirmation
* Paraphrase
* Clarification request
* Translation
* Restructuring
* Approximation

Generalization |
| Effective group interaction includes but not limited to: | * Identifying and evaluating what is occurring within an interaction in a non-judgmental way
* Using active listening
* Making decision about appropriate words, behavior
* Putting together response which is culturally appropriate
* Expressing an individual perspective
* Expressing own philosophy, ideology and background and exploring impact with relevance to communication

Openness and flexibility in communication |
| 1. Situations include but not limited to:
 | * Establishing rapport
* Eliciting facts and information
* Facilitating resolution of issues
* Developing action plans

Diffusing potentially difficult situations |

**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:

* Effective communication process
* Active listening
* Giving/receiving feedback
* Interpretation of information
* Role boundaries setting
* Negotiation
* Establishing empathy
* Openness and flexibility in communication
* Communication skills required to fulfill job roles as specified by the organization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups and different styles of group leadership
* Communication skills relevant to client groups
* Flexibility in communication
* Communication skills relevant to client groups

**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. Met communication needs of clients and colleagues
2. Contributed to the development of communication strategies
3. Conducted interviews
4. Facilitated group discussions

Represented the organization |
| 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 in this unit may be assessed through: 1. Direct Observation
2. /Demonstration with Oral Questioning
3. Written Examination
 |
| 1. Context of Assessment
 | Competency may be assessed individually in the actual workplace or through accredited institution |
| 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:** **OG/OS/LT/BC/02/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to perform numerical functions. The person who is competent in this unit shall be able to: Calculate with whole numbers and familiar fractions, decimals and percentages for work; Estimate, measure, and calculate with routine metric measurements for work; Use routine maps and plans for work; Interpret, draw and construct 2D and 3D shapes for work; Interpret routine tables, graphs and charts for work; Collect data and construct routine tables and graphs for work; and Use basic functions of calculator

**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. 1. Calculate with whole numbers and familiar fractions, decimals and percentages for work
 | 1. Mathematical information that may be partly embedded in routine workplace tasks and texts is selected and interpreted
2. Whole numbers and routine or familiar fractions, decimals and percentages including familiar rates are interpreted and comprehended
3. Calculations which may involve a number of steps are perform
4. Calculations done with whole numbers and routine or familiar fractions, decimals and percentages
5. Conversion between equivalent forms of fractions, decimals and percentages is done
6. Order of operations is applied to solve multi-step calculations
7. Problem solving strategies are appropriately applied
8. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task
	1. Formal and informal mathematical language and symbolism are used to communicate the result of the task
 |
| 2. Estimate, measure, and calculate with routine metric measurements for work | 1. Measurement information in workplace tasks and texts are selected and interpreted in accordance with workplace requirements
2. Appropriate routine measuring equipment are identified and selected in accordance with workplace requirements
3. Measurements are estimated and made using correct units
4. Estimations and calculations done using routine measurements
5. Conversions performed between routinely used metric units
6. Problem solving processes are used to undertake the tasks
7. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task
	1. Information is recorded using mathematical language and symbols appropriate to discuss the task
 |
| 3. Use routine maps and plans for work | 1. Features are identified in routine maps and plans
2. Symbols and keys in routine maps and plans are clearly explained
3. Orientation of map to North is identified and interpreted
4. Understanding of direction and location is clearly demonstrated
5. Simple scale is applied to estimate length of objects, or distance to location or object
	1. Directions are given and received using both formal and informal language
 |
| 4. Interpret, draw and construct 2D and 3D shapes for work | 1. Two dimensional shapes and routine three dimensional shapes identified in everyday objects and in different orientations
2. The use and application of shapes elaborately explained
3. Formal and informal mathematical language and symbols used to describe and compare the features of two dimensional shapes and routine three dimensional shapes
4. Common angles identified
5. Common angles in everyday objects are appropriately estimated
6. Formal and informal mathematical language are used to describe and compare common angles
7. Common geometric instruments used to draw two dimensional shapes
	1. Routine three dimensional objects constructed from given nets
 |
| 5. Interpret routine tables, graphs and charts for work | 1. Routine tables, graphs and charts identified in predominately familiar texts and contexts
2. common types of graphs and their different uses identified
3. features of tables, graphs and charts identified
4. Information in routine tables, graphs and charts located and interpreted
5. Calculations are perform to interpret information
6. How statistics can inform and persuade interpretations is explained
7. misleading statistical information is identified
	1. Information relevant to the workplace is discussed
 |
| 6. Collect data and construct routine tables and graphs for work | 1. Features of common tables and graphs identified
2. uses of **different tables and graphs** identified
3. Data and variables to be collected are determined
4. The audience is determined
5. Method of data collection is select
6. Data is collected
7. Information is collated in a table
8. Suitable scale and axes determined
9. Graph to present information is drafted and drawn
10. Data checked to ensure that it meets the expected results and context
11. Information is reported or discussed using formal and informal mathematical language
 |
| 7. Use basic functions of calculator | 1. Keys are identified and used for **basic functions on a calculator**
2. Calculation done using whole numbers, money and routine decimals and percentages
3. Calculation done with routine fractions and percentages
4. Order of operations is applied to solve multi-step calculations
5. Results are interpreted, displayed and recorded
6. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task
	1. Formal and informal mathematical language and appropriate symbolism and conventions used to communicate the result of the task
 |

**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 fractions, decimals and percentages | May include but not limited to:* 1. Fraction
	2. Decimals
	3. Percentages
 |
| Common 2D shapes and common 3D shapes | May include but not limited to:1. Round
2. Square
3. Rectangular
4. Triangle
5. Sphere
6. Cylinder
7. Cube
8. Polygons
9. Cuboids
 |
| Symbols and keys in routine maps and plans | May include but not limited to:1. Charts
2. Maps
3. Graphs
 |
| Use basic functions of calculator | May include but not limited to:4.1 Addition4.2 Multiplication4.3 Calculate ratios 4.4 Conversion of ratios into percentages |
| Routine tables, graphs and charts for work | May include but not limited to:5.1 Bar Graphs5.2 Flow Charts5.3 Pie Charts5.4 Pictograph5.5 Line Graphs5.6 Time Series Graphs5.7 Stem and Leaf Plot5.8 Histogram5.9 Dot Plot5.10 Scatter plot |

**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 calculator
* Using different measuring tools

**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. Calculated correctly with whole numbers and routine or familiar fractions, decimals and percentages
2. Estimated, measured and calculated with routine metric measurements
3. Applied simple scale to estimate length of objects or distance to location or object
4. Used formal and informal mathematical language to describe and compare common angles
5. Used common geometric instruments to draw two dimensional shapes
6. Collected data and constructed routine tables and graphs
	1. Used basic functions of calculator correctly
 |
| 2. Resource Implications | 2.1 Calculator2.2 Basic measuring instruments |
| 3. Methods of Assessment | Competency may be assessed through:3.1 Written Test3.2 Interview/Oral Questioning* 1. Demonstration
 |
| 4. Context of Assessment | Competency may be assessed in an off the job setting  |
| 5. 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: OG/OS/LT/BC/03/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to effectively use digital devices such as smartphones, tablets, laptops and desktop PCs. It entails identifying and using digital devices such as smartphones, tablets, laptops and desktop computers for purposes of communication, work performance and management at the work place.

**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 appropriate computer software and hardware
 | * 1. Concepts of ICT are determined in accordance with computer equipment
	2. Classifications of computers are determined in accordance with manufacturers specification
	3. ***Appropriate computer software*** is identified according to manufacturer’s specification
	4. ***Appropriate computer hardware*** is identified according to manufacturer’s specification
	5. Functions and commands ofoperating system are determined in accordance withmanufacturer’s specification
 |
| 1. Apply security measures to data, hardware, software in automated environment
 | * 1. ***Data security and privacy are classified*** in accordance with the prevailing technology
	2. ***Security threats*** areidentified, **and *control measures*** are applied in accordance with laws governing protection of ICT
	3. Computer threats and crimes are detected.
	4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT
 |
| 1. Apply computer software in solving tasks
 | * 1. ***Word processing concepts***are applied in resolving workplace tasks, report writing and documentation
	2. ***Word processing utilities*** are applied in accordance with workplace procedures
	3. Worksheet layout is prepared in accordance with work procedures
	4. Worksheet is build and data manipulated in the worksheet in accordance with workplace procedures
	5. Continuous data manipulated on worksheet is undertaken in accordance with work requirements
	6. Database design and manipulation is undertaken in accordance with office procedures
	7. Data sorting, indexing, storage, retrieval and security is provided in accordance with workplace procedures
 |
| 1. Apply internet and email in communication at workplace
 | * 1. Electronic mail addresses are opened and applied in workplace communication in accordance with office policy
	2. Office internet functions are defined and executed in accordance with office procedures
	3. ***Network configuration*** is determined in accordance with office operations procedures
	4. Official World Wide Web is installed and managed according to workplace procedures
 |
| 1. Apply desktop publishing in official assignments
 | * 1. Desktop publishing functions and tools are identified in accordance with manufactures specifications
	2. Desktop publishing tools are developed in accordance with work requirements
	3. Desktop publishing tools are applied in accordance with workplace requirements
	4. Typeset work is enhanced in accordance with workplace standards
 |
| 1. Prepare presentation packages
 | * 1. Types of presentation packages are identified in accordance with office requirements
	2. Slides are created and formulated in accordance with workplace procedures
	3. Slides are edited and run in accordance with work procedures
	4. Slides and handouts are printed according to work 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.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| Appropriate computer software may include but not limited to: | * A collection of instructions or computer tools that enable the user to interact with a computer, its hardware, or perform tasks.
 |
| Appropriate computer hardware may include but not limited to: | Collection of physical parts of a computer system such as;* Computer case, monitor, keyboard, and mouse
* All the parts inside the computer case, such as the hard disk drive, motherboard and video card
 |
| Data security and privacy may include but not limited to: | * Confidentiality of data
* Cloud computing
* Integrity -but-curious data surfing
 |
| Security and control measures may include but not limited to: | * Counter measures against cyber terrorism
* Risk reduction
* Cyber threat issues
* Risk management
* Pass wording
 |
| Security threats may include but not limited to: | * Cyber terrorism
* Hacking
 |
| Word processing concepts may include but not limited to: | * Using a special program to create, edit and print documents
 |
| Network configuration may include but not limited to: | * Organizing and maintaining information on the components of a computer network
 |

**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 skills
* Interpretation
* Typing
* Communication
* Computing (applying fundamental operations such as addition, subtraction, division and multiplication)
* Using calculator
* Basic ICT skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Software concept
* Functions of computer software and hardware
* Data security and privacy
* Computer security threats and control measures
* Technology underlying cyber-attacks and networks
* Cyber terrorism
* 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 sheets;
* Meaning, formulae, function and charts, uses and layout
* Data formulation, manipulation and application to cells
* Database;
* Database design, data manipulation, sorting, indexing, storage retrieval and security
* Desktop publishing;
* Designing and developing desktop publishing tools
* Manipulation of desktop publishing tools
* Enhancement of typeset work and printing documents
* Presentation Packages;
* Types of presentation Packages
* Creating, formulating, running, editing, printing and presenting slides and handouts
* Networking and Internet;
* Computer networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and integrate 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 and controlled security threats
	2. Detected and protected computer crimes
	3. Applied word processing in office tasks
	4. Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures
	5. Opened electronic mail for office communication as per workplace procedure
	6. Installed internet and World Wide Web for office tasks in accordance with office procedures
	7. Integrated emerging issues in computer ICT applications
	8. Applied laws governing protection of ICT
 |
| 1. Resource Implications
 | * 1. Tablets
	2. Laptops
	3. Desktop computers
	4. Calculators
	5. Internet
	6. Smart phones
	7. Operation Manuals
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written Test
	2. Demonstration
	3. Practical assignment
	4. Interview/Oral Questioning
	5. Demonstration
 |
| 1. Context of Assessment
 | Competency may be assessed in an off and on the job setting |
| 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:** **OG/OS/LT/BC/04/5/A**

**UNIT DESCRIPTION**

This unit covers the outcomes required to build and develop the enterprise to be more competitive within a changing business environment, specifically responding to consumer demands while maintaining product quality and accessibility, building a customer base and employee motivation.

**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. Develop business Innovative strategies
 | 1. Business innovation strategies are determined in accordance with the organization strategies
2. Business innovative strategies are implemented for the purpose of business growth
3. Track record and normative capability profile of enterprise and similar businesses are reviewed and considered in setting ***strategic directions***.
4. Strengths, weaknesses, opportunities and threats are considered when developing new ideas, approaches, goals and directions
5. Decisions about enterprise strategies/directions are made after careful consideration of all relevant information
6. ***Business/corporate plan*** is developed that sets out tactics, resource implications, timeframes, production and sales target
 |
| 1. Develop new products/ markets
 | 2.1 Alternative product/service offerings are canvassed and studied for feasibility2.2 Potential and new sources/sellers of supplies and raw materials are identified and canvassed.2.3 Target markets and buyers are identified and surveyed as to their preferences and brand loyalties. |
| 1. Expand customers and product lines
 | 3.1 Enterprise is built up and sustained through responsiveness to market demands and the regulatory environment. 3.2 Competitive advantage of existing products and services is maintained/enhanced through responsive advocacies and strategies. 3.3 Constant listening to stakeholder/client feedback is ensured to maintain loyal client base.  |
| 1. Motivate staff/workers
 | 4.1 Regular dialogue is established and maintained in all levels and relevant sections of the enterprise4.2 Flow of communications in both directions is encouraged4.3 Helpful mechanisms and benefits are implemented4.4 Issues/problems are proactively resolved through win-win solutions wherever practicable |
| 5. Expand employed capital base | 5.1 Capital employed in business is continuously reviewed as per the strategic plan5.2 Business share holdings are reviewed in accordance with the type of business 5.3 Capital employed is expanded according to organization procedures5.3 Types of shares are determined according to strategic plan5.4 Shares diversification process is undertaken as per office procedures5.5 Role of shareholders is determined and implemented in accordance organization procedures  |
| 6. Undertake county/ regional business expansion | 6.1 Regions for expansion are continuously reviewed in accordance with strategic plan and company’s expansion plan6.2 County business regulations are reviewed and adhered to in accordance with set procedures6.3 Regional laws and regulations are adhered to in accordance with set procedures6.4 County/regional business expansion is undertaken in accordance with organization’s growth/ expansion plan |

**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**  |
| Strategic directions include but not limited to: | 1.1 Business continuity and succession1.2 Resource access security1.3 Core competencies development1.4 New developments e.g. technological change, new products |
| Business/Corporate plan include but not limited to: | 2.1 Action steps and responsibilities of departments and individual workers 2.2 Resource requirements and budget 2.3 Tactics and strategies to achieve objectives  |
| Helpful mechanisms include but not limited to: | 3.1 Wage and non-wage benefits 3.2 Employee awards and recognition systems 3.3 Employee rights and welfare policies 3.4 Full-disclosure/transparency policies  |
| Profitability of enterprise include but not limited to: | Operating expenses lower than income |
| Communication strategy include but not limited to: | Blue print of exchange of informationTechnology 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:

* Assessing a range of alternative products and strategies
* Critically analyzing information, summarizing and making sense of previous and current market trends
* Identifying changing consumer preferences and demographics
* Thinking “outside the box”
* Ensuring quality consistency
* Reducing lead time to product/service delivery
* Managing operations/ production
* Using formal problem-solving procedures, e. g., root-cause analysis, six sigmas
* Communication skills
* Applying motivational principles, e. g., positive stroking, behavior modification
* Assessing range of alternatives rather than choosing the easiest option
* Achieving ownership and credibility for the enterprise vision
* Critically analyzing information, summarizing and making sense of previous and current market trends
* Developing solutions and practical strategies which are “outside the box”

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
* Conflict resolution
* Health, safety and environment (HSE) principles and requirements
* Public-relations strategies
* Basic cost-benefit analysis
* Basic financial management
* Business strategic planning
* Impact of change on individuals, groups and industries
* Employee assistance
* Government and regulatory processes
* Local and international market trends
* Product promotion strategies
* Mechanisms in the enterprise
* Market and feasibility studies
* Local and global supply chains Business models and strategies
* Government and regulatory processes
* Local and international business environment
* Concepts of change management
* Relevant developments in other industries
* Capital employed
* Regional/ County business expansion
* Innovation in business

**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:1.1 Demonstrated ability to maintain a profitable and stable enterprise as shown by stakeholder feedback, employee testimonies and company financial statements1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise1.3 Demonstrated ability to manage/operate a micro/small-scale business* 1. Demonstrated basic marketing skills
 |
| 1. Resource Implications
 | The following resources should be provided:2.1 Interview guide for entrepreneurs2.2 Enterprise workers and third parties 2.3 Materials and location relevant to the proposed activity and tasks  |
| 1. Methods of Assessment
 | 3.1 Case problems3.2 Interview3.3 Portfolio* 1. Third part reports
 |
| 1. Context of Assessment
 | 4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group |
| 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: OG/OS/LT/BC/05/5/A**

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating interpersonal communication, critical safe work habits, leading small teams, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills 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. Emotions are managed 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.
6. Self-esteem and a positive self-image are developed and maintained.
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 as per ***personal objectives***
10. Critics are managed as per personal objectives
 |
| 1. Demonstrate interpersonal communication
 | 1. Listening and understanding is demonstrated as per communication policy
2. Writing to the needs of the audience is demonstrated as per communication policy
3. Speaking, reading and writing is demonstrated as per communication policy
4. Empathising is demonstrated as per the communication policy
5. Internal and external customers’ needs are identified and interpreted as per the communication policy
6. Persuasion is demonstrated as per the communication policy
7. Communication nnetworks are established as per the SOPs
8. Information is shared as per communication structure
 |
| Demonstrate critical safe work habits  | * 1. Stress is managed in accordance with workplace procedures.
	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. Work priorities are set in accordance to workplace procedures.
	5. Leisure time is recognized in line with organization policy.
	6. Abstinence from ***drug and substance abuse*** is observed as per workplace policy.
	7. Awareness of HIV and AIDS is demonstrated in line with workplace requirements.
	8. Safety consciousness is demonstrated in the workplace based on organization safety policy.
1. ***Emerging issues*** are dealt with in accordance with organization policy.
 |
| 1. Lead small teams
 | 1. Performance expectations for the ***team*** are set as per the organization objectives
2. Tasks are assigned in accordance with the organization policy.
3. Team performance indicators are identified according to set rules and regulations.
4. ***Forms of communication*** in a team are established according to office policy.
5. Communication is carried out as per workplace place policy and requirements of the job.
6. ***Feedback*** on performance is collected and analyzed based on established team learning process
7. ***Gender mainstreaming*** is undertaken in accordance with set regulations.
 |
| 1. Plan and organize work
 | 1. Task requirements are identified as per the workplace objectives
2. Task is interpreted in accordance with safety (OHS ), environmental requirements and quality requirements
3. Work activity is organized with other involved personnel as per the SOPs
4. Resources are mobilized, allocated and utilized to meet project goals and deliverables.
5. Work activities are monitored and evaluated in line with organization procedures.
6. Job planning is documented in accordance with workplace requirements.
7. Time is managed achieve workplace set goals and objectives.
 |
| 1. Maintain professional growth and development
 | * 1. Personal training needs are identified and assessed in line with the requirements of the job.
	2. ***Training and career opportunities*** are identified and availed based on job requirements.
	3. Licensees and certifications relevant to job and career are obtained and renewed.
	4. ***Personal growth*** is pursued towards improving the qualifications set for the profession.
	5. Work priorities are identified based on requirement of the job and workplace policy.
	6. Recognitions are sought as proof of career advancement in line with professional requirements.
 |
| 1. Demonstrate workplace learning
 | * 1. Own learning is managed as per workplace policy.
	2. Learning opportunities are sought and allocated based on job requirement and in line with organization policy.
	3. Contribution to the learning community at the workplace is carried out.
	4. ***Range of media for learning*** are identified as per the training need
	5. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job
	6. Enthusiasm for ongoing learning is demonstrated
	7. Time and effort is invested in learning new skills-based job requirements
	8. Willingness to learn in different context is demonstrated based on available learning opportunities arising in the workplace.
	9. Opportunities for performance improvement are identified proactively in area of work.
	10. Awareness of personal role in workplace ***innovation*** is demonstrated.
 |
| 1. Demonstrate problem solving skills
 | * 1. Problems are identified as per the context of data and circumstances
	2. Problem solutions are sought based on the problem
	3. Independence and initiative in identifying and solving problems is demonstrated.
	4. Team problems are solved as per the workplace guidelines
	5. Problem solving strategies are applied as per the workplace guidelines
 |
| 1. Demonstrate workplace ethics
 | * 1. Policies and guidelines are observed as per the workplace requirements
	2. Self-worth and profession is exercised in line with personal goals and organizational policies
	3. Code of conduct is observed as per the workplace requirements
	4. Personal and professional integrity is demonstrated as per the personal goals
	5. Commitment to jurisdictional laws is demonstrated as per the workplace requirements
 |

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

IT and courses |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

This section describes the required skills which supports performance. These skills will need to be considered in the learning and assessment process.

* Personal hygiene practices
* Intra and Interpersonal skills
* Communication skills
* Knowledge management
* Interpersonal skills
* Critical thinking skills
* Observation skills
* Organizing skills
* Negotiation skills
* Monitoring skills
* Evaluation skills
* Record keeping skills
* Problem solving skills
* Decision Making skills
* Resource utilization skills
* Resource mobilization skills

**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
* Resources and allocating resources
* Organizing work
* Monitoring and evaluation
* Record keeping
* Workplace problems and how to deal with them
* Negotiation
* Assertiveness
* Team work
* Gender mainstreaming
* HIV and AIDS
* Drug and substance abuse
* Leadership
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Learning
* Creativity
* Innovation
* 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. Case studies/scenarios
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through: * Oral Interview
* Observation
* Third Party Reports

Written |
| 1. Context of Assessment
 | * 1. Competency may be assessed in workplace or in a simulated workplace setting
	2. Assessment shall be observed while tasks are being undertaken whether individually or in-group
 |
| 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:** **OG/OS/LT/BC/06/4/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to follow procedures for environmental hazard control, follow procedures for environmental pollution control, comply with workplace sustainable resource use and evaluate 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 strictly followed according to environmental regulations and OSHS.
	2. ***Disposal methods*** of hazardous wastes are followed always according to environmental regulations and OSHS.
	3. ***PPE*** is used according to OSHS.
 |
| 1. Control environmental Pollution control
 | * 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 resource use
 | * 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 to the work group where appropriate.
	2. Current resource usage is measured and recorded by members of the work group.
	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.
 |

**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** |
| * PPE may include but are not limited to:
 | 1.1 Masks1.2 Gloves1.3 Goggles1.4 Safety hat1.5 Overall* 1. Hearing protector
	2. Safety boots
 |
| * Environmental pollution control measures may include but are not limited to:
 | * 1. Methods for minimizing or stopping spread and ingestion of airborne particles
	2. Methods for minimizing or stopping spread and inhaling gases and fumes
	3. Methods for minimizing or stopping spread and ingestion of liquid wastes
 |
| * Waste management Procedures may include but are not limited to:
 | 3.1 Sorting3.2 Storing of items3.2 Recycling of items3.3 Disposal of items3.4 Handling 3.5 Transport |
| * Resources may include but are not limited to:
 | 4.1 Electric4.2 Water4.3 Fuel4.3 Telecommunications* 1. Supplies

4.5 Materials |
| * Workplace environmental hazards may include but are not limited to:
 | 5.1Biological hazards5.2 Chemical and dust hazards5.3 Physical hazards |
| * Organizational systems and procedures may include but are not limited to:
 | 7.1 Supply chain, procurement and purchasing7.2 Quality assurance7.3 Making recommendations and seeking approvals |

**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:

* Following storage methods of environmentally hazardous materials
* Following disposal methods of hazardous wastes
* Using PPE
* Practicing OSHS
* Complying environmental pollution control
* Observing solid waste management
* Complying methods of minimizing noise Pollution
* Complying methods of minimizing wastage
* Employing waste management procedures
* Economizing resource consumption
* Listing of resources used
* Measuring current usage of resources
* Identifying and reporting workplace environmental hazards
* Conveying all environmental issues
* Following environmental regulations
* Identifying environmental regulations
* Assessing procedures for assessing compliance
* Collecting information on environmental and resource efficiency systems and procedures, and Providing information to the work group
* Measuring and recording current resource usage
* Analysing and recording current purchasing strategies.
* Analysing current work processes to access information and data and Assisting identifying areas for improvement

**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
* Identification of areas for improvement

**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:1.1 Controlled environmental hazard 1.2 Controlled environmental pollution 1.3 Demonstrated sustainable resource use1.4 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 (ex. Cleaning tools, cleaning materials, trash bags, etc.)
	3. PPE
	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:3.1 Demonstration3.2 Oral questioning3.3 Written examination3.4 Third Party Reports3.5 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad)3.6 Simulations and role-plays |
| 1. Context of Assessment
 | Competency may be assessed on the job, off the job or a combination of these as well as in work placement (internship). Off the job assessment must be undertaken in a closely simulated workplace environment.  |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** **OG/OS/LT/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

**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. Observe workplace procedures for hazards and risk prevention
 | 1.1 Arrangement of work area and items in accordance with  Company housekeeping procedures is followed 1.2 Work standards and procedures are followed1.3 ***Prevention and control measures***, including use of ***safety***  ***gears/PPE*** are applied 1.4 Standards and procedures for ***incidents and emergencies*** are studied and applied, as needed |
| 1. Participate in arrangements for workplace safety and health maintenance
 | 2.1 Orientations on ***OSH requirements/regulations*** of tasks is  participated2.2 Feedback on health, safety, and security concerns are provided to appropriate personnel as required in a sufficiently detailed manner. 2.3 Workplace procedures for reporting hazards, incidents, injuries and sickness are practiced2.4 OSH requirements/ regulations and workplace safety and hazard control procedures are reviewed, and compliance reported to appropriate personnel, as needed2.5 Needed ***OSH-related trainings*** are identified and proposed to appropriate personnel |

**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** |
| * Prevention and control measures may include but are not limited to:
 | 1.1 Eliminate the hazard (i.e., get rid of the dangerous machine1.2 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off)1.3 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one)1.4 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule)1.5 Use engineering controls to reduce the risk (i.e. use safety guards to machine)1.6 Use personal protective equipment1.7 Safety, Health and Work Environment Evaluation* 1. Periodic and/or special medical examinations of workers
 |
| * Safety gears /PPE (Personal Protective Equipment’s) may include but are not limited to:
 | 2.1 Arm/Hand guard, gloves2.2 Eye protection (goggles, shield) 2.3 Hearing protection (ear muffs, ear plugs)2.4 Hair Net/cap/bonnet2.5 Hard hat2.6 Face protection (mask, shield)2.7 Apron/Gown/coverall/jump suit2.8 Anti-static suits2.9 High-visibility reflective vest |
| * Incidents and emergencies may include but are not limited to:
 | 3.1 Chemical spills3.2 Equipment/vehicle accidents3.3 Explosion3.4 Fire3.5 Gas leak3.6 Injury to personnel3.7 Structural collapse* 1. Toxic and/or flammable vapors emission.
 |
| * OSH requirements / regulations may include but are not limited to:
 | 4.2 Building code4.5 Permit to Operate |
| * OSH-related trainings may include but are not limited to:
 | 5.1 Safety Orientations relevant to tasks5.2 Safe and Correct Operation of Tools and Equipment5.3 Health Orientations/trainings (Healthy Lifestyle, Prevention of drug/alcohol dependence, violence in the workplace, work-stress)5.4 Prevention and Control of OSH Hazards in the workplace5.5 Chemical Handling5.6 Safety Trainings (Fire Safety, Construction Safety, Confined Space)5.7 Prevention and Control of Work-related Injuries and Illness5.8 Basic First-aid Trainings5.9 Emergency Response Trainings5.10 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 Skills
* Knowledge management
* Collaborating skills
* Interpersonal Skills
* Troubleshooting skills
* Critical thinking Skills
* Observation Skills

**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
 | Assessment requires evidence that the candidate:1.1 Follows work and housekeeping procedures, and complies with its requirements1.2 Follows work standards and procedures1.3 Applies OSH preventive and control measures, including emergency plan, standards and procedures1.4 Participates in orientations on OSH requirements of tasks1.5 Provides feedback on health, safety, and security concerns in a sufficiently detailed manner.1.6 Practices workplace procedures for reporting hazards, incidents, injuries and sickness1.7 Reviews and reports compliance to workplace OSH regulations and hazard control procedures1.8 Identifies and proposes OSH trainings relevant to work |
| 1. Resource Implications
 | The following resources should be provided:2.1 Facilities, materials tools and equipment necessary for the activity |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:3.1 Observation/Demonstration with oral questioning3.2 Third party report3.3 Written exam |
| 1. Context of Assessment
 | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.  |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:1.1 Follows work and housekeeping procedures, and complies with its requirements1.2 Follows work standards and procedures1.3 Applies OSH preventive and control measures, including emergency plan, standards and procedures1.4 Participates in orientations on OSH requirements of tasks1.5 Provides feedback on health, safety, and security concerns in a sufficiently detailed manner.1.6 Practices workplace procedures for reporting hazards, incidents, injuries and sickness1.7 Reviews and reports compliance to workplace OSH regulations and hazard control procedures1.8 Identifies and proposes OSH trainings relevant to work |
| 1. Resource Implications
 | The following resources should be provided:2.1 Facilities, materials tools and equipment necessary for the activity |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:3.1 Observation/Demonstration with oral questioning3.2 Third party report3.3 Written exam |
| 1. Context of Assessment
 | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.  |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# TEST GROUND FUELS

**UNIT CODE: OG/OS/LT/CR/01/4/A**

**UNIT DESCRIPTION**

The unit standard specifies the competencies required to Test Ground Fuels in a Petroleum Products Testing Laboratory. It involves preparing for ground fuels testing, setting up the test equipment, testing fuel samples, evaluating quality of test results and completing work processes and documentation.

This unit standard applies to the oil and gas industry.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**These describe the keyoutcomes which make upworkplace function | **PERFORMANCE CRITERIA*****(Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| 1. Prepare for ground fuel testing
 | * 1. Product sample logbook information is obtained in accordance with workplace procedures
	2. Testing area is prepared in accordance with workplace procedures
	3. Test sample is conditioned in accordance with workplace procedures
	4. Tools, equipment and apparatus are prepared in accordance with workplace procedures
	5. Materials are assembled in accordance with workplace procedures
 |
| 1. Test ground fuel samples
 | * 1. Test equipment is set up and used according with workplace procedures.
	2. Safety and environmental requirements are determined and adhered to in accordance with workplace procedures
	3. Test runs are conducted in accordance with workplace procedures
	4. Samples are tested in accordance with workplace procedures
 |
| 1. Evaluate the test results
 | * 1. The test results are contrasted with source certificate of quality in accordance with workplace procedures
	2. The test result is compared with the national specification for the product grade
 |
| 1. Complete ground fuels testing
 | * 1. A report of testing is prepared in accordance with workplace procedures
	2. Testing area is cleaned and test sample and non-recyclable materials are handled in accordance with environmental requirements.
	3. Recyclable material is collected and stored in accordance with workplace procedures
	4. Apparatus and equipment are cleaned, inspected and defects reported in accordance to workplace procedures
	5. Housekeeping is maintained in accordance with workplace 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.

| **Variable** | **Range*****May include but is not limited to:*** |
| --- | --- |
| Tools, equipment and apparatus include but not limited to: | * Distillation, flash point, smoke point, copper corrosion, colour ASTM, water content and particulate matter equipment and density meter,
* Measuring cylinders, beakers, thermometers and hydrometers
* Personal protective equipment (PPEs)
 |
| Materials include but not limited to: | * Cleaning materials,
* Blotting papers
* Drying agents
* Reagents
* Detergents
 |
| Safety and environmental requirements include but not limited to: | * Occupational Safety and Health Act, 2007
* Environment Management and Coordination Act, 1999
 |

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Laboratory safety management
* Hazards associated with handling petroleum products and how they can be mitigated
* Laboratory personal protective equipment
* Laboratory test equipment operating principles
* Qualitative and quantitative analysis of laboratory test results
* Fuel testing nomenclature
* Preparation of materials for testing
* Setting up fuel test equipment and apparatus
* How to shut down petroleum products test equipment safely
* Methods of safely handling a test specimen with due regard for personal safety and the environment
* The importance of leaving testing area and equipment in a safe condition on completion of testing activities

# TEST JET A-1 FUEL

**UNIT CODE: OG/OS/LT/CR/02/4/A**

**UNIT DESCRIPTION**

The unit standard specifies the competencies required to Test Jet A-1 fuel in petroleum products testing laboratory. It involves preparing for Jet A-1 fuel testing, setting up the test equipment, testing fuel samples, evaluating test results and completing testing and documentation to the required standards.

This unit standard applies to the oil and gas industry.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** These describe the keyoutcomes which make upworkplace 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. Prepare for Jet A-1 fuel testing
 | * 1. Product sample logbook information is obtained in accordance with joint inspection group (JIG) guidelines
	2. Test area is prepared in accordance with workplace procedures
	3. Test sample is conditioned in accordance with workplace procedures
	4. Tools, equipment and apparatus are prepared in accordance with workplace procedures
	5. Materials are assembled as per workplace procedures
 |
| 1. Test the Jet A-1 sample
 | * 1. Test equipment is set up and used according with workplace procedures
	2. Safety and environmental requirements are determined and adhered to in accordance with workplace procedures
	3. Test runs are conducted according with JIG requirements
	4. Samples are tested in accordance with the documented test method for the subject parameters.
 |
| 1. Evaluate the test results
 | * 1. The test results are contrasted with source certificate of quality in accordance with workplace procedures
	2. The test result is compared with the JIG specification for Jet A-1 fuel grade
 |
| 1. Complete Jet A-1 fuel testing
 | * 1. Testing is completed and a report prepared in accordance with JIG guidelines
	2. Testing area is cleaned and test sample and non-recyclable materials are handled in accordance with environmental requirements.
	3. Recyclable material is collected and stored in accordance with workplace procedures and JIG guidelines
	4. Apparatus and equipment are cleaned, inspected and defects reported in accordance with workplace procedures
	5. Housekeeping is maintained in accordance with workplace 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.

| **Variable** | **Range** |
| --- | --- |
| Tools, equipment and apparatus include but are not limited to: | * Distillation, flash point, smoke point, copper corrosion, colour say bolt, water content, jet fuel thermal oxidation test (JFTOT), existent gum, and particulate matter equipment and density and conductivity meter
* Personal protective equipment (PPEs)
* Measuring apparatus and devices
 |
| Safety and environmental requirements include but are not limited to: | * Occupational Safety and Health Act 2007
* Environment Management and Coordination Act, 1999
 |
| Materials include but are not limited to: | * Cleaning materials,
* Blotting papers
* Drying agents
* Reagents
* Detergents
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required knowledge**

The section describes the required knowledge which supports performance. This knowledge will need to be considered in the learning and assessment process.

The individual needs to demonstrate knowledge of:

* Joint inspection group (JIG) requirements for Jet A-1 testing
* Laboratory safety management
* Hazards associated with handling Jet A-1 fuel and how they can be mitigated
* Hazards associated with handling anti-static additives or products containing anti-static additives
* Laboratory personal protective equipment
* Laboratory Jet A-1 fuel test equipment operating principles
* Qualitative and quantitative analysis of laboratory test results in compliance with JIG guidelines
* Fuel testing nomenclature for Jet A-1fuel
* Preparation of materials for Jet A-1 fuel testing
* Setting up Jet A-1 fuel test equipment and apparatus
* How to shut down petroleum Jet A-1 fuel test equipment safely
* Safe working practices and procedures to be followed when testing Jet A-1 fuel
* Methods of safely handling Jet A-1 fuel test specimen with due regard for personal safety and the environment
* Housekeeping in accordance with JIG requirements

# DETERMINE PETROLEUM PRODUCT MOVEMENT QUALITY REQUIREMENTS

**UNIT CODE: OG/OS/LT/CR/03/4/A**

**UNIT DESCRIPTION**

The unit standard specifies the competencies required to determine petroleum product quality requirements. It involves determining depot product receipt quality, blending the line sample, testing fuel samples, evaluating quality of test results and completing work processes.

This unit standard applies to the oil and gas industry.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** These describe the keyoutcomes which make upworkplace function | **PERFORMANCE CRITERIA*****(Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| 1. Prepare to determine petroleum product quality requirements
 | * 1. Run sheet information is obtained in accordance with workplace procedures
	2. Product source quality data is obtained in accordance with workplace procedures
	3. Interface cutting instructions are presented to line operators in accordance with workplace procedures
	4. Product sample logbook information is obtained in accordance with workplace procedures
	5. Work area is prepared in accordance with workplace procedures
	6. Equipment functionality is confirmed in accordance with workplace procedures
	7. Test equipment is set up and used according to workplace procedures
 |
| 1. Define

petroleum product quality | * 1. Test requirements are determined in accordance with workplace procedures
	2. Test sample is conditioned in accordance with workplace procedures
	3. Safety and environmental requirements are determined and adhered to in accordance with workplace procedures
	4. Blend product slops with line product in accordance with workplace procedures
	5. Tank samples are tested in accordance with workplace procedures
 |
| 1. Evaluate the test results
 | * 1. The test results are contrasted with source certificate of quality in accordance with workplace procedures
	2. The test result is compared with the national specification for the product grade
 |
| 1. Complete product quality requirements
 | * 1. Slop disposal advice is executed in accordance with workplace procedures
	2. Interface cutting and slopping is done in accordance with workplace procedures
	3. Product recertification is done in accordance with workplace 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.

| **Variable** | **Range*****May include but is not limited to:*** |
| --- | --- |
| Apparatus and equipment include but are not limited to: | * Personal protective equipment (PPEs)
* Test equipment
* Measuring apparatus and devices
* Information communication tools
 |
| Safety and environmental requirements include but not limited to: | * Occupational Safety and Health Act, 2007
* Environment Management and Coordination Act, 1999
 |

**REQUIRED KNOWLEDGE**

The section describes the required knowledge which supports performance. This knowledge will need to be considered in the learning and assessment process.

The individual needs to demonstrate knowledge of:

* + Operation of a multi-product pipeline
	+ Laboratory safety management
	+ Hazards associated with handling petroleum products and how they can be mitigated
	+ Laboratory personal protective equipment
	+ Laboratory test equipment operating principles
	+ Qualitative and quantitative analysis of laboratory test results
	+ Preparation of slop disposal advice
	+ Fuel testing nomenclature
	+ Preparation of materials for testing
	+ Setting up fuel test equipment and apparatus
	+ Recertification of petroleum products
	+ How to shut down petroleum products test equipment safely
	+ How to shut down petroleum products test equipment safely
	+ Problems that can occur with testing activities and how they can be mitigated
	+ Safe working practices and procedures to be followed when testing petroleum products
	+ Methods of safely handling a test specimen with due regard for personal safety and the environment
	+ The importance of leaving testing area and equipment in a safe condition on completion of testing activities

# PERFORM QUALITY CONTROL JET A-1 FUEL HANDLING

**UNIT CODE: OG/OS/LT/CR/04/4/A**

**UNIT DESCRIPTION**

The unit standard specifies the competencies required to perform Jet A-1 fuel handling procedures in a depot. It involves preparing to carry out product receipt, testing the sample, evaluating the test results and completing work processes. This unit standard applies to the oil and gas industry.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** These describe the keyoutcomes which make upworkplace function | **PERFORMANCE CRITERIA*****(Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| 1. Prepare for Jet A-1 fuel handling
 | * 1. Job requirements for Jet A-1 fuel handling are determined in accordance with JIG guidelines
	2. Batch information, run-sheet information and logistics planning are gathered in accordance with workplace procedures
	3. Materials are prepared in accordance with workplace procedures
	4. Test runs are conducted according with workplace instructions
	5. Portable equipment are checked in accordance with standard operating procedures
	6. Jet A-1 fuel handling equipment are prepared in accordance with JIG guidelines
 |
| 1. 2 Carry out Jet A-1 fuel handling
 | * 1. Safety and environmental requirements are determined and adhered to in accordance with workplace procedures
	2. Quality checks are done in accordance with JIG guidelines and workplace procedures
	3. Jet A-1 electrical conductivity is confirmed in accordance with JIG guidelines
	4. Jet A-1 fuel road tankers are inspected in accordance with JIG guidelines
	5. Particulate matter content is evaluated in accordance with JIG guidelines and workplace procedures
 |
| 1. Complete Jet A-1 fuel handling
 | * 1. The quality of test results is confirmed in accordance with JIG guidelines
	2. The product quality is confirmed in accordance with JIG guidelines
	3. The Jet A-1 fuel documentation is handled in accordance with JIG guidelines
 |

**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*****May include but is not limited to:*** |
| --- | --- |
| Jet A-1 fuel documentation include but not limited to: | * Certificates of quality
* Pre-discharge test report
* Tank releases certificates
 |
| Materials include but are not limited to: | * Cleaning materials
* Detergents
* Reagents
* Anti-static additives
 |
| Quality checks include but are not limited to: | * Particulate matter analysis
* Density testing
* Visual checks
* Particulates presence
* Colour
* water
 |
| Jet A-1 fuel handling equipment include but are not limited to: | * Shell water detector
* Particle counter
* Density meter
* Conductivity meter
* Personal protective equipment (PPEs)
* Measuring apparatus and devices
 |
| Chemical and physical property | * Colour
* Solubility
* Hardness
* Density
 |

**REQUIRED KNOWLEDGE**

The section describes the required knowledge which supports performance. This knowledge will need to be considered in the learning and assessment process.

The individual needs to demonstrate knowledge of:

* + Joint inspection group (JIG) requirements for Jet A-1 fuel handling
	+ Laboratory safety management
	+ Anti-static additives handling
	+ Laboratory personal protective equipment
	+ Methods of safely handling Jet A-1 fuel
	+ Safe working practices and procedures to be followed when handling Jet A-1 fuel
	+ Procedures for handling Jet A-1 fuel for quality assurance as detailed in JIG guidelines
	+ Problems that can occur with Jet A-1 fuel handling and how they can be mitigated
	+ Housekeeping in accordance with JIG requirements

# PERFORM LABARATORY PROCESS QUALITY ASSUARANCE

**UNIT CODE: OG/OS/LT/CR/05/4/A**

**UNIT DESCRIPTION**

The unit standard specifies the competencies required to perform laboratory processes quality assurance. It involves preparing for laboratory processes quality assurance, carrying out quality assurance on laboratory inputs, processes and outputs.

This unit standard applies to the oil and gas industry

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT** These describe the keyoutcomes which make upworkplace function | **PERFORMANCE CRITERIA*****(Bold and italicized terms are elaborated in the Range)*** |
| --- | --- |
| 1. Prepare for laboratory quality assurance
 | * 1. Job requirements are determined from workplace instructions
	2. Personnel skills, work processes and test equipment status records are verified in accordance with the workplace procedures
	3. Safety and environmental requirements are determined and adhered to in accordance with workplace procedures
	4. Test methods are validated in accordance with the workplace procedures
 |
| 1. Perform laboratory processes quality assurance
 | * 1. The skills checks required for the processes are done in accordance with workplace procedures and ISO standards
	2. The processes are verified in accordance with workplace procedures and ISO standards
	3. The test equipment are validated in accordance with workplace procedures
	4. Laboratory housekeeping is performed in accordance with workplace procedures
 |
| 1. Complete laboratory processes quality assurance
 | * 1. Records are updated and kept in accordance with workplace procedures
	2. Materials and retention samples are collected and stored in accordance with workplace procedures
	3. Reports of quality assurance are prepared and shared in accordance with workplace 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.

| **Variable** | **Range*****May include but is not limited to:*** |
| --- | --- |
| Equipment and apparatus include but are not limited to: | * Personal protective equipment (PPE)
* Laboratory equipment
* Measuring apparatus and devices
 |
| Safety and environmental requirements include but are not limited to: | * Occupational Safety and Health Act, 2007
* Environment Management and Coordination Act, 1999
 |
| Materials include but are not limited to: | * Certified reference material (CRM)
* Internal quality control (IQC)test samples
* Cleaning materials
* Detergents
* Reagents
 |
| Records include but are not limited to: | * Personnel
* Equipment calibration

ISO documents |

**REQUIRED KNOWLEDGE**

This section describes the required knowledge which supports performance. This knowledge will need to be considered in the learning and assessment process.

The individual needs to demonstrate knowledge of:

* + Laboratory safety management
	+ Hazards associated with handling IQC and CRM samples and their mitigation
	+ Laboratory personal protective equipment
	+ Laboratory ISO standards
	+ Laboratory quality assurance processes
	+ Laboratory test equipment operating principles
	+ Staff performance management