

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**FISHERIES TECHNICIAN**

**LEVEL 6**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned with the Constitution of Kenya 2010 and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key fundamental feature of this policy is that, it is radically changing the design and delivery of the TVET training. This policy document emphasized the following: that training in TVET shall be competency based, curriculum development shall be industry led, certification based on demonstration of competence and 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 have been developed.

It is my conviction that these occupational standards will play a great role towards development of competent human resource for the Fisheries Sector’s growth and 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 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labor force.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Fisheries technology Sector Skills Advisory Committee (SSAC) have developed these occupational standards.

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

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

These occupational standards have been designed for competency-based training and have independent competencies of learning that allow the trainee flexibility in entry and exit. In developing the occupational standards, significant involvement and support was received from various organizations.

I recognize with appreciation the role of the Fisheries technology Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in the standards. I also thank all stakeholders in the Fisheries technology sector for their valuable input and all those who participated in the process of developing these occupational standards.

I am convinced that these occupational standards will go a long way in ensuring that workers in Fisheries technology Sector acquire competencies that will enable them to perform their work more efficiently.

COUNCIL SECRETARY/CEO TVET CDACC

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# **ABBREVIATIONS AND ACRONYMS**

BC : Basic Competency

CC : Core Competency

CDACC : Curriculum Development Assessment and Certification Council

CO : Common Units

KCSE : Kenya Certificate of Secondary Education

KNQA : Kenya National Qualifications Authority

OS : Occupational Standards

OSHA : Occupation Safety and Health Act

PPE : Personal Protective Equipment

SSAC : Sector Skills Advisory Committee

TVET : Technical and Vocational Education and Training

# KEY TO UNIT CODE

 **AGR / OS/FIS/ BC /01/ 6/A**

Industry or sector

Occupational standards

Occupational area

Type of competency

Competency number

Competency level

Control version

# OVERVIEW

The **Fisheries technology level six qualification** consists of competencies that a person must achieve to demonstrate knowledge of fish biology and behavior, perform breath hold diving operations, apply food safety and sanitation, use standard measuring devices and instruments, implement good manufacturing practice and procedures, prevent and fight fire, protect aquatic environment, perform first aid treatment on board, transmit and receive information by marine radio or telephone, manage sea vessels, manage fishing gear, manage fish aggregating devices, handle harvested fish and manage fish health within the institution’s/organizations acceptable Standard Operating Procedures (SOPs).

**Units of competency**

This course consists of basic, core competencies as indicated below:

**BASIC UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **UNIT CODE**  | **UNIT TITLE**  |
| AGR/OS/FIS/BC/01/6/A | Demonstrate communication skills |
| AGR/OS/FIS/BC/02/6/A | Demonstrate numeracy skills  |
| AGR/OS/FIS/BC/03/6/A | Demonstrate digital literacy |
| AGR/OS/FIS/BC/04/6/A | Demonstrate entrepreneurial skills |
| AGR/OS/FIS/BC/05/6/A | Demonstrate employability skills |
| AGR/OS/FIS/BC/06/6/A | Demonstrate environmental literacy |
| AGR/OS/FIS/BC/07/6/A | Demonstrate occupational safety and health practices |

[**COMMON UNITS OF COMPETENCY**](#_Toc531088077)

|  |  |
| --- | --- |
| **UNIT CODE**  | **UNIT TITLE**  |
| AGR/OS/FIS/CC/01/6/A | Demonstrate knowledge of fish biology and behavior |
| AGR/OS/FIS/CC/02/6/A | Perform breath hold diving operations |
| AGR/OS/FIS/CC/03/6/A | Apply food safety and sanitation |
| AGR/OS/FIS/CC/04/6/A | Use standard measuring devices and instruments |
| AGR/OS/FIS/CC/05/6/A | Implement good manufacturing practice and procedures |
| AGR/OS/FIS/CC/06/6/A | Prevent and fight fire |
| AGR/OS/FIS/CC/07/6/A | Protect aquatic environment |

[**CORE UNITS OF COMPETENCY**](#_Toc531088079)

| **UNIT CODE**  | **UNIT TITLE**  |
| --- | --- |
| AGR/OS/FIS/CR/01/6/A | Perform first aid treatment on board |
| AGR/OS/FIS/CR/02/6/A | Transmit and receive information by marine radio or telephone |
| AGR/OS/FIS/CR/03/6/A | Manage small fishing vessels |
| AGR/OS/FIS/CR/04/6/A | Manage outboard motors |
| AGR/OS/FIS/CR/05/6/A | Handle harvested fish |
| AGR/OS/FIS/CR/06/6/A | Manage fishing gear |
| AGR/OS/FIS/CR/07/6/A | Conduct fishing operations |
| AGR/OS/FIS/CR/08/6/A | Manage fish aggregating devices |
| AGR/OS/FIS/CR/09/6/A | Manage fish health |

# BASIC UNITS OF COMPETENCY

#  DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** AGR/OS/FIS/BC/01/6/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate communication skills. It involves meeting communication needs of clients and colleagues, developing communication strategies, establishing and maintaining communication pathways, conducting interviews, facilitating group discussion and representing the organization.

**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 based on workplace requirements
2. Different communication approaches are identified and applied according to clients’ needs
3. Conflict is identified and addressed as per the standards of the organization
 |
| 1. Develop communication strategies
 | * 1. Strategies for effective internal and external dissemination of information are developed as per organization’s requirements
	2. Special communication needs are considered in developing strategies according workplace procedures
	3. ***Communication strategies*** are analyzed, evaluated and revised based the workplace needs
 |
| 1. Establish and maintain communication pathways
 | * 1. Pathways of communication are established as per organization policy
	2. Pathways are maintained and reviewed according to organization procedures
 |
| 1. Promote use of communication strategies
 | * 1. Information is provided to all areas of the organization as per strategy requirements
	2. Effective communication techniques are articulated and modeled according work requirements
	3. Personnel are given guidance about adapting communication strategies as per organization procedures
 |
| 1. Conduct interview
 | 1. A range of appropriate communication strategies are employed in ***interview situations*** based on the workplace requirements
2. Records of interviews are made and maintained in accordance with organizational procedures
3. Effective questioning, listening and nonverbal communication techniques are used as per needs
 |
| 1. Facilitate group discussion
 | 1. Mechanisms to enhance ***effective group interaction*** are identified and implemented according to workplace requirements
2. Strategies to encourage group participation are identified and used as per organizations’ procedures
3. Meetings objectives and agenda are set and followed based on workplace requirements
4. Relevant information is provided and feedback obtained according to set protocols
5. Evaluation of group communication strategies is undertaken in accordance with workplace guidelines
6. Specific communication needs of individuals are identified and addressed as per individual needs
 |
| 1. Represent the organization
 | 1. Relevant presentation are researched and presented based on internal or external communication forums requirements
2. Presentation is delivered in a clear and sequential manner as per the predetermined time
3. Presentation is made as per appropriate media
4. Difference views are respected based on workplace procedures
5. Written communication is done as per organizational standards
6. Inquiries are responded according to 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** |
| 1. Communication strategies may include but not limited to:
 | * Language switch
* Comprehension check
* Repetition
* Asking confirmation
* Paraphrase
* Clarification request
* Translation
* Restructuring
* Approximation
* Generalization
 |
| 1. Effective group interaction may include but not limited to:
 | * Identifying and evaluating what is occurring within an interaction in a nonjudgmental 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
 |
| 1. Situations may 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:

* Communication
* Active listening
* Interpretation
* Negotiation
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups
* Styles of group leadership
* Key elements of communications strategy

**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. Developed communication strategies to meet the organization requirements and applied in the workplace
2. Established and maintained communication pathways for effective communication in the workplace
3. Used communication strategies involving exchanges of complex oral information
 |
| 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 in this unit may be assessed through: 1. Direct observation
2. Oral questioning
3. Written texts
 |
| 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:** AGR/OS/FIS/BC/02/6/A

**UNIT DESCRIPTION**

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

**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 a wide range of mathematical calculations for work
 | * 1. Mathematical information embedded in a range of workplace tasks and texts is extracted as per workplace procedures.
	2. Mathematical information is interpreted and comprehended as per job specifications
	3. A range of mathematical and problem solving processes are selected and used as per job specification
	4. Different forms of fractions, decimals and percentages are flexibly used as per SOPs
	5. Calculation performed with positive and negative numbers as per SOPs
	6. Numbers are expressed as powers and roots and are used in calculations as per SOPs
	7. Calculations done using routine formulas as per SOPs
	8. Estimation and assessment processes are used to check outcome as per workplace procedures
	9. Mathematical language is used to discuss and explain the processes, results and implications of the task as per workplace procedures
 |
| 1. Use and apply ratios, rates and proportions for work
 | * 1. Information regarding ratios, rates and proportions extracted from a range of workplace tasks and texts as per SOPs
	2. Mathematical information related to ratios, rate and proportions is analysed as per SOPs
	3. Problem solving processes are used to undertake the task as per workplace procedures
	4. Equivalent ratios and rates are simplified as per SOPs
	5. Quantities are calculated using ratios, rates and proportions as per SOPS
	6. Graphs, charts or tables are constructed to represent ratios, rates and proportions as per SOPs
	7. The outcomes reviewed and checked as per job specifications
	8. Information is record using mathematical language and symbols as per workplace procedures
 |
| 1. Estimate, measure and calculate measurement for work
 | * 1. Measurement information embedded in workplace texts and tasks are extracted and interpreted as per job specifications
	2. Appropriate workplace measuring equipment are identified and selected as per job specifications
	3. Accurate measurements are estimated and made as per SOPs
	4. The area of ***2D shapes*** including compound shapes are calculated as per SOPs
	5. The volume of 3D shapes is calculated using relevant formulas as per SOPs
	6. Sides of right angled triangles are calculated using Pythagoras’ theorem as per SOPs
	7. conversions are perform between units of measurement as per job specification
	8. Problem solving processes are used to undertake the task as per workplace Procedures
	9. The measurement outcomes are reviewed and checked as per workplace procedures
	10. Information is recorded using mathematical language and symbols appropriate for the task as per workplace procedures
 |
| 1. Use detailed maps to plan travel routes for work
 | * 1. Different types of maps are identified and interpreted as per job requirements
	2. Key features of maps are identified as per job requirements
	3. Scales are identified and interpreted as per job requirements
	4. Scales are applied to calculate actual distances
	5. Positions or locations are determined using directional information as per job requirements
	6. Routes are planned by determining directions and calculating distances, speeds and times as per job requirements
	7. Information is gathered and identified and relevant factors related to planning a route checked as per job requirements
	8. Relevant equipment is select and checked for accuracy and operational effectiveness as per job requirements
	9. Task is planned and recorded using specialized mathematical language and symbols appropriate for the task as per job requirements
 |
| 1. Use geometry to draw 2D shapes and construct 3D shapes for work
 | * 1. A range of 2D shapes and 3D shapes and their uses in work contexts is identified as per job specifications
	2. Features of 2D and 3D shapes are named and described as per job specifications
	3. Types of angles in 2D and 3D shapes are identified as per job specifications
	4. Angles are drawn, estimated and measured using geometric instruments as per job requirements
	5. Angle properties of 2D shapes are named and identified as per SOPs
	6. Angle properties are used to evaluate unknown angles in shapes as per SOPs
	7. Properties of perpendicular and parallel lines are applied to shapes as per SOPs
	8. Understanding and use of symmetry is demonstrated as per SOPs
	9. Understanding and use of similarity is demonstrated as per SOPs
	10. The workplace tasks and mathematical processes required are identified as per workplace procedures
	11. 2D shapes is drawn for work as per job specification
	12. 3D shapes is constructed for work as per job specification
	13. The outcomes are reviewed and checked as per workplace procedures
	14. Specialized mathematical language and symbols appropriate for the task are used as per SOPs
 |
| 1. Collect, organize, and interpret statistical data for work
 | * 1. Workplace issue requiring investigation are identified as per workplace procedures
	2. Audience / population / sample unit is determined as per workplace procedures as per workplace procedures
	3. Data to be collected is identified as per workplace procedures
	4. Data collection method is selected as per workplace procedures
	5. Appropriate statistical data is collected and organized as per SOPs
	6. Data is illustrated in appropriate formats as per SOPs
	7. The effectiveness of different types of graphs are compared as per SOPs
	8. The summary statistics for collected data is calculated as per SOPs
	9. The results / findings are interpreted as per SOPs
	10. Data is checked to ensure that it meets the expected results and content as per workplace procedures
	11. Information from the results including tables, graphs and summary statistics is extracted and interpreted as per workplace procedure
	12. Mathematical language and symbols are used to report results of investigation as per workplace procedure
 |
| 1. Use routine formula and algebraic expressions for work
 | * 1. Understanding of informal and symbolic notation, representation and conventions of algebraic expressions is demonstrated as per SOPs
	2. Simple algebraic expressions and equations are developed as per job specification
	3. Operate on algebraic expressions as per job requirement
	4. Algebraic expressions are simplified as per job requirement
	5. Substitution into simple routine equations is done as per SOPs
	6. Routine formulas used for work tasks are identified and comprehended as per SOPs
	7. Routine formulas are evaluate by substitution as per SOPs
	8. Routine formulas transposed as per SOPs
	9. Appropriate formulas are identified and used for work related tasks as per workplace procedures
	10. Outcomes are checked and result of calculation used as per workplace procedures
 |
| 1. Use common functions of a scientific calculator for work
 | * 1. Required numerical information to perform tasks is located as per job specification
	2. The order of operations and function keys necessary to solve mathematical calculation are determined as per job specification
	3. Function keys on a scientific calculator are identified and used as per SOPs
	4. Estimations are referred to check reasonableness of problem solving process as per workplace procedures
	5. Appropriate mathematical language, symbols and conventions are used to report results as per 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** |
| 1. 2D shapes may include but not limited may include but not limited to:
 | * Triangles
* Square
* Rectangle
* Triangle
 |

**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. Developed communication strategies to meet the organization requirements and applied in the workplace
2. Established and maintained communication pathways for effective communication in the workplace
3. Used communication strategies involving exchanges of complex oral information
 |
| 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 in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 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:** AGR/OS/FIS/BC/03/6/A

**UNIT DESCRIPTION**

This unit describes competencies required to demonstrate digital literacy. It involves, identifying computer software and hardware, applying security measures to data, hardware, and software in automated environment, applying computer software in solving task, applying internet and email in communication at workplace, applying desktop publishing in official assignments and preparing presentation packages.

**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 of operating system are determined in accordance with manufacturer’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*** reidentified ***and control measures*** are applied in accordance with laws governing protection of ICT
	3. Computer threats and crimes are detected in accordance to Information Management security guidelines
	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 as per the job requirements
	2. ***Word processing utilities*** are applied in accordance with workplace procedures
	3. Worksheet layout is prepared in accordance with work procedures
	4. Worksheet is built 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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. 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
 |
| 1. Data security and privacy may include but not limited to:
 | * Confidentiality of data
* Cloud computing
* Integrity -but-curious data surfing
 |
| 1. Security and control measures may include but not limited to:
 | * Counter measures against cyber terrorism
* Risk reduction
* Cyber threat issues
* Risk management
* Pass-wording
 |
| 1. Security threats may include but not limited to:
 | * Cyber terrorism
* Hacking
 |

**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
 |  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 may be assessed through:* 1. Observation
	2. Oral questioning
	3. Written test
	4. Portfolio of Evidence
	5. Interview
	6. Third party report
 |
| 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 :** AGR/OS/FIS/BC/04/6/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate understanding of entrepreneurship. It involves demonstrating understanding of an entrepreneur, entrepreneurship, and self-employment, identifying entrepreneurship opportunities, creating entrepreneurial awareness, applying entrepreneurial motivation, developing business innovative strategies and developing business plan.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** | **PERFORMANCE CRITERIA**  |
| 1. Demonstrate understanding of an Entrepreneur
 | 1. Entrepreneurs and Business persons are distinguished as per principles of entrepreneurship
2. ***Types of entrepreneurs*** are identified as per principles of entrepreneurship
3. Ways of becoming an Entrepreneur are identified as per principles of Entrepreneurship
4. ***Characteristics of Entrepreneurs*** are identified as per principles of Entrepreneurship
5. Factors affecting Entrepreneurship development are explored as per principles of Entrepreneurship
 |
| 1. Demonstrate understanding of Entrepreneurship and self-employment
 | 1. Entrepreneurship and self-employment are distinguished as per principles of entrepreneurship
2. Importance of self-employment is analysed based on business procedures and strategies
3. ***Requirements for entry into self-employment*** are identified according to business procedures and strategies
4. Role of an Entrepreneur in business is determined according to business procedures and strategies
5. Contributions of Entrepreneurs to National development are identified as per business procedures and strategies
6. Entrepreneurship culture in Kenya is explored as per business procedures and strategies
7. Born or made Entrepreneurs are distinguished as per entrepreneurial traits
 |
| 1. Identify Entrepreneurship opportunities
 | 1. Sources of business ideas are identified as per business procedures and strategies
2. Business ideas and opportunities are generated as per business procedures and strategies
3. Business life cycle is analysed as per business procedures and strategies
4. Legal aspects of business are identified as per procedures and strategies
5. Product demand is assessed as per market strategies
6. Types of ***business environment*** are identified and evaluated as per business procedures
7. Factors to consider when evaluating business environment are explored based on business procedure and strategies
8. Technology in business is incorporated as per best practice
 |
| 1. Create entrepreneurial awareness
 | 1. ***Forms of businesses*** are explored as per business procedures and strategies
2. Sources of business finance are identified as per business procedures and strategies
3. Factors in selecting source of business finance are identified as per business procedures and strategies
4. ***Governing policies*** on Small Scale Enterprises (SSEs) are determined as per business procedures and strategies
5. Problems of starting and operating SSEs are explored as per business procedures and strategies
 |
| 1. Apply entrepreneurial motivation
 | 1. ***Internal and external motivation*** factors are determined in accordance with motivational theories
2. Self-assessment is carried out as per entrepreneurial orientation
3. Effective communications are carried out in accordance with communication principles
4. Entrepreneurial motivation is applied as per motivational theories
 |
| 1. Develop innovative business strategies
 | 1. Business innovation strategies are determined in accordance with the organization strategies
2. Creativity in business development is demonstrated in accordance with business strategies
3. ***Innovative business strategies*** are developed as per business principles
4. Linkages with other entrepreneurs are created as per best practice
5. ICT is incorporated in business growth and development as per best practice
 |
| 1. Develop Business Plan
 | 1. Identified Business is described as per business procedures and strategies
2. Marketing plan is developed as per business plan format
3. Organizational/Management plan is prepared in accordance with business plan format
4. Production/operation plan in accordance with business plan format
5. Financial plan is prepared in accordance with the business plan format
6. Executive summary is prepared in accordance with business plan format
7. Business plan is presented as per best practice
 |

**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. Types of entrepreneurs may include but not limited to:
 | * Innovators
* Imitators
* Craft
* Opportunistic
* Speculators
 |
| 1. Characteristics of Entrepreneurs may include but not limited to:
 | * Creative
* Innovative
* Planner
* Risk taker
* Networker
* Confident
* Flexible
* Persistent
* Patient
* Independent
* Future oriented
* Goal oriented
 |
| 1. Requirements for entry into self-employment may include but not limited to
 | * Technical skills
* Management skills
* Entrepreneurial skills
* Resources
* Infrastructure
 |
| 1. Internal and external motivation may include but not limited to:
 | * Interest
* Passion
* Freedom
* Prestige
* Rewards
* Punishment
* Enabling environment
* Government policies
 |
| 1. Business environment may include but not limited to:
 | * External
* Internal
* Intermediate
 |
| 1. Forms of businesses may include but not limited to:
 | * Sole proprietorship
* Partnership
* Limited companies
* Cooperatives
 |
| 1. Governing policies may include but not limited to:
 | * Increasing scope for finance
* Promoting cooperation between entrepreneurs and private sector
* Reducing regulatory burden on entrepreneurs
* Developing IT tools for entrepreneurs
 |
| 1. Innovative business strategies may include but not limited to:
 | * New products
* New methods of production
* New markets
* New sources of supplies
* Change in industrialization
 |

**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
* Management
* Problem-solving
* Root-cause analysis
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Decision making
* Business communication
* Change management
* Competition
* Risk
* Net working
* Time management
* Leadership
* Factors affecting entrepreneurship development
* Principles of Entrepreneurship
* Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
* Conflict resolution
* Health, safety and environment (HSE) principles and requirements
* Customer care strategies
* Basic financial management
* Business strategic planning
* Impact of change on individuals, groups and industries
* Government and regulatory processes
* Local and international market trends
* Product promotion strategies
* Market and feasibility studies
* Government and regulatory processes
* Local and international business environment
* Relevant developments in other industries
* Regional/ County business expansion 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
 | 1. Assessment requires evidence that the candidate:
2. Distinguished entrepreneurs and businesspersons correctly
3. Identified ways of becoming an entrepreneur appropriately
4. Explored factors affecting entrepreneurship development appropriately
5. Analysed importance of self-employment accurately
6. Identified requirements for entry into self-employment correctly
7. Identified sources of business ideas correctly
8. GeneratedBusiness ideas and opportunities correctly
9. Analysed business life cycle accurately
10. Identified legal aspects of business correctly
11. Assessed product demand accurately
12. Determined Internal and external motivation factors appropriately
13. Carried out communications effectively
14. Identified sources of business finance correctly
15. Determined Governing policy on small scale enterprise appropriately
16. Explored problems of starting and operating SSEs effectively
17. Developed Marketing, Organizational/Management, Production/Operation and Financial plans correctly
18. Prepared executive summary correctly
19. Determined business innovative strategies appropriately
20. Presented business plan effectively
 |
| 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
 | 1. Written tests
2. Oral questions
3. Third party report
4. Interviews
5. Portfolio of Evidence
 |
| 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:** AGR/OS/FIS/BC/05/6/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 a workplace team, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and managing ethical performance.

**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 interpersonal communication
 | 1. Writing skills are demonstrated as per communication policy
2. Negotiation and persuasion skills are demonstrated as per communication policy
3. Internal and external stakeholders’ needs are identified and interpreted as per the communication policy
4. Communication networks are established based on workplace policy
5. Information is shared as per communication policy
 |
| 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. Lead a workplace team
 | 1. Performance targets for the ***team*** are set based on organization’s objectives
2. Duties are assigned in accordance with the organization policy.
3. ***Forms of communication*** in a team are established according to organization’s policy.
4. Team performance is evaluated based on set targets as per workplace policy.
5. Conflicts are resolved between team members in line with organization policy.
6. Gender related issues are identified and mainstreamed in accordance workplace policy.
7. Human rights and fundamental freedoms are identified and respected as Constitution of Kenya 2010.
8. Healthy relationships are developed and maintained in line with workplace.
 |
| 1. Plan and organize work
 | 1. Work plans are prepared based on activities and budget.
2. Assigned tasks are interpreted and expectations identified as per the workplace instructions.
3. Task occupational safety and health requirements are identified and observed regulations.
4. Work resources are identified, mobilized, allocated and utilized based on organization work plans.
5. Work activities are monitored and evaluated in line with work plans and workplace policy.
6. Work plans are reviewed based on target and available resources.
 |
| 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 utilized based on job requirements.
	3. Resources for training are mobilized and allocated based organizations and individual skills needs.
	4. Licensees and certifications relevant to job and career are obtained and renewed as per policy.
	5. Work priorities and personal commitments are balanced and managed based on requirements of the job and personal objectives.
	6. Recognitions are sought as proof of career advancement in line with professional requirements.
 |
| 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 problem solving skills
 | * 1. Creative, innovative and practical solutions are developed based on the problem
	2. Independence and initiative in identifying and solving problems is demonstrated based on requirements of the job.
	3. Team problems are solved as per the workplace guidelines
	4. Problem solving strategies are applied as per the workplace guidelines
	5. Problems are analyzed and assumptions tested as per the context of data and circumstances
 |
| 1. Manage ethical performance
 | * 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.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Drug and substance abuse may include but not limited to:
 | Commonly abused* Alcohol
* Tobacco
* Miraa
* Over-the-counter drugs
* Cocaine
* Bhang
* Glue
 |
| 1. Feedback may include but not limited to:
 | * Verbal
* Written
* Informal
* Formal
 |
| 1. Relationships may include but not limited to:
 | * Man/Woman
* Trainer/trainee
* Employee/employer
* Client/service provider
* Husband/wife
* Boy/girl
* Parent/child
* Sibling relationships
 |
| 1. Forms of communication may include but not limited to:
 | * Written
* Visual
* Verbal
* Non verbal
* Formal and informal
 |
| 1. Team may include but not limited to:
 | * Small work group
* Staff in a section/department
* Inter-agency group
 |
| 1. Personal growth may include but not limited to:
 | * Growth in the job
* Career mobility
* Gains and exposure the job gives
* Net workings
* Benefits that accrue to the individual as a result of noteworthy performance
 |
| 1. Personal objectives may include but not limited to:
 | * Long term
* Short term
* Broad
* Specific
 |
| 1. Trainings and career opportunities may includes but not limited to
 | * Participation in training programs
* Serving as Resource Persons in conferences and workshops
 |
| 1. Resource may include may but not limited to:
 | * Human
* Financial
* Technology
 |
| 1. Innovation may include but not limited to:
 | * New ideas
* Original ideas
* Different ideas
* Methods/procedures
* Processes
* New tools
 |
| 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
 |

**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:

* Interpersonal
* Communication
* Critical thinking
* Organizational
* Negotiation
* Monitoring
* Evaluation
* Record keeping
* Problem solving
* Decision Making
* Resource utilization
* Resource mobilization

**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
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Organizing work
* Monitoring and evaluation
* Record keeping
* Gender mainstreaming
* HIV and AIDS
* Drug and substance abuse
* Professional growth and development
* Technology in the workplace
* Innovation
* Emerging 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. Conducted self-management
	2. Demonstrated interpersonal communication
	3. Demonstrated critical safe work habits
	4. Demonstrated the ability to lead a workplace team
	5. Planned and organized work
	6. Maintained professional growth and development
	7. Demonstrated workplace learning
	8. Demonstrated problem solving skills
	9. Demonstrated the ability to manage performance ethically
 |
| 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. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 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:** AGR/OS/FIS/BC/06/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate environmental literacy. It involves, controlling environmental hazard and environmental pollution, demonstrating sustainable resource use, evaluating current practices in relation to resource usage, identifying environmental legislations/conventions for environmental concerns, implementing specific environmental programs, monitoring activities on environmental protection/Programs , analyzing resource use and developing resource conservation plans

**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 according to environmental regulations and OSHS.
3. ***PPE*** is used according to OSHS.
 |
| 1. Control environmental Pollution
 | * 1. Environmental pollution ***control measures*** are implemented in accordance with international protocols.
	2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999
	3. Methods for minimizing noise pollution is complied with based on Noise and Excessive Vibration Pollution and Control Regulations, 2009
 |
| 1. Demonstrate sustainable resource use
 | * 1. Methods for minimizing wastage are complied with based on organizational waste management guide
	2. Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle)
	3. Methods for economizing and reducing resource consumption are practiced as per the Constitution of Kenya 2010 Article 69 .
 |
| 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
	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. 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
 |
| 1. Implement specific environmental programs
 | 1. Programs/Activities are identified according to organizations policies and guidelines.
2. Individual roles/responsibilities are determined and performed based on the activities identified.
3. Problems/constraints encountered are resolved in accordance with organizations’ policies and guidelines
4. Stakeholders are consulted based on company guidelines
 |
| 1. Monitor activities on Environmental protection/Programs
 | 1. Activities are periodically monitored and Evaluated according to the objectives of the environmental program
2. Feedback from stakeholders are gathered and considered in Proposing enhancements to the program based on consultations
3. Data gathered are analyzed based on Evaluation requirements
4. Recommendations are submitted based on the findings
5. Management support systems are set/established to sustain and enhance the program
6. Environmental incidents are monitored and reported to
7. concerned/proper authorities
 |
| 1. Analyze resource use
 | 1. All resource consuming processes are Identified as per the organizational work plan
2. Quantity and nature of resource consumed is determined based on processes
3. Resource flow is analyzed as per different parts of the process.
4. Wastes are classified according to NEMA regulations on waste management.
 |
| 1. Develop resource Conservation plans
 | 9.1. Efficiency of use/conversion of resources is determined according to industry protocol.9.2. Causes of low efficiency of use of resources are Determined based on industry protocol.9.3. Plans for increasing the efficiency of resource use are developed based on findings. |

**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 not limited to
 | * + Mask
	+ Gloves
	+ Goggles
	+ Safety hat
	+ Overall
* Hearing protector
 |
| 1. Control measures may include but not limited to
 | * Methods for minimizing or stopping spread and ingestion of airborne particles
* Methods for minimizing or stopping spread and ingestion of gases and fumes
* Methods for minimizing or stopping spread and ingestion of liquid wastes
 |

**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
* Communication
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* PPEs
* Environmental regulations
* OSHS
* Pollution
* Waste management
* Principle of 3Rs
* Types of resources
* Techniques in measuring current usage of resources
* Environmental hazards
* Regulatory requirements

**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 hazard
	2. Controlled environmental pollution
	3. Demonstrated sustainable resource use
	4. Evaluated current practices in relation to resource usage
	5. Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues /concerns.
	6. Described industrial standard environmental practices according to the different environmental issues/concerns.
	7. Resolved problems/ constraints encountered based on management standard procedures
	8. Implemented and monitored environmental practices on a periodic basis as per company guidelines
	9. Recommended solutions for the improvement of the program
	10. Monitored and reported to proper authorities any environmental incidents
 |
| 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)
	3. PPE, manuals and references
	4. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection
	5. 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 test
	4. Portfolio of Evidence
	5. Interview
	6. Third party report
 |
| 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 OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** AGR/OS/FIS/BC/07/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate occupational health and safety practices. It involves identifying workplace hazards and risks, identifying and implementing appropriate control measures to hazards and risks and implementing OSH programs, procedures and policies/guidelines.

**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 workplace hazards and risk
 | 1.1 ***Hazards*** in the workplace are identified ***based their indicators*** 1.2 Risks and hazards are evaluated based on legal requirements.1.3 ***OSH concerns*** raised by workers are addressed as per legal requirements.  |
| 1. Control OSH hazards
 | 2.1 Hazard prevention ***and control measures*** are implemented as per legal requirement.2.2 Risk assessment is conductedand a risk matrix developed based on likely impact.2.3 ***Contingency measures***, including ***emergency procedures*** during workplace ***incidents and emergencies*** are recognized and established in accordance with organization procedures. |
| 1. Implement OSH programs
 | 3.1 Company OSH program are identified, evaluated and reviewed based on legal requirements.3.2 Company OSH programs are implemented as per legal requirements.3.3 Workers are capacity built on OSH standards and procedures as per legal requirements3.4 ***OSH-related records*** are maintained as per legal 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** |
| 1. Hazards may include but not limited to:
 | * Physical hazards – impact, illumination, pressure, noise,
* vibration, extreme temperature, radiation
* Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects
* Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors
* Ergonomics
* Psychological factors – over exertion/ excessive force,

awkward/static positions, fatigue, direct pressure,* varying metabolic cycles
* Physiological factors – monotony, personal relationship, work out cycle
* Safety hazards (unsafe workplace condition) –confined space, excavations, falling objects, gas leaks, electrical, poor storage of materials and waste, spillage, waste and debris
* Unsafe workers’ act (Smoking in off-limited areas, Substance and alcohol abuse at work)
 |
| 1. Indicators may include but not limited to:
 | * Increased of incidents of accidents, injuries
* Increased occurrence of sickness or health complaints/ symptoms
* Common complaints of workers related to OSH
* High absenteeism for work-related reasons
 |
| 1. OSH concerns may include but not limited to:
 | * Workers’ experience/observance on presence of work hazards
* Unsafe/unhealthy administrative arrangements (prolonged work hours, no break time, constant overtime, scheduling of tasks)
* Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines
 |
| 1. Safety gears /PPE (Personal Protective Equipment) may include but 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. Appropriate risk controls

may include but not limited to: | * Appropriate risk controls in order of impact are as follows:
* Eliminate the hazard altogether (i.e., get rid of the dangerous machine)
* Isolate the hazard from anyone who could be harmed (i.e., keep the machine in a closed room and operate it remotely; barricade an unsafe area off)
* Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one)
* Use administrative controls to reduce the risk (i.e., train workers how to use equipment safely; train workers about the risks of harassment; issue signage)
* Use engineering controls to reduce the risk (i.e., attach guards to the machine to protect users)
* Use personal protective equipment (i.e., wear
* gloves and goggles when using the machine)
 |
| 1. Contingency measures may include but not limited to:
 | * Evacuation
* Isolation
* Decontamination
* (Calling designed) emergency personnel
 |
| 1. Incidents and emergencies may include but 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-related Records may include but not limited to:
 | * Medical/Health records
* Incident/accident reports
* Sickness notifications/sick leave application
* OSH-related trainings obtained
 |

**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
* Presentation
* Risk assessment
* Evaluation
* Critical thinking
* Problem solving
* Negotiation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* General OSH Principles
* Occupational hazards/risks recognition
* OSH organizations providing services on OSH evaluation and/or work environment measurements (WEM)
* National OSH regulations; company OSH policies and protocols
* Systematic gathering of OSH issues and concerns
* General OSH principles
* National OSH regulations
* Company OSH and recording protocols, procedures and policies/guidelines
* Training and/or counseling methodologies and 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. Identified hazards in the workplace based their indicators
2. Evaluated workplace hazards based on legal requirements.
3. Addressed OSH concerns raised by workers as per legal requirements.
4. Implemented hazard prevention and control measures as per legal requirement.
5. Conducted risk assessment as per legal requirement.
6. Developed risk matrix based on likely impact.
7. Recognized and established contingency measures in accordance with organization procedures.
8. Identified, evaluated and reviewed company OSH program based on legal requirements.
9. Implemented company OSH programs as per legal requirements.
10. Capacity built workers on OSH standards and procedures as per legal requirements
11. Maintained OSH-related records as per legal requirements.
 |
| 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. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 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

# DEMONSTRATE THE KNOWLEDGE OF FISH BIOLOGY AND BEHAVIOUR

**UNIT CODE:** AGR/OS/FIS/CC/01/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate the knowledge of fish biology and behaviour. It involves identifying fish species, demonstrating understanding of the physiological systems of fish and fish behaviour.

**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 fish species
 | 1. ***Materials and equipment for identification*** are identified as per the taxonomic guidelines and standards
2. ***.Personal protective equipment*** is worn as per the occupational health and safety procedures.
3. Fish parts/external morphology are observed as per the workplace procedures
4. . Fish species are identified as per the taxonomic systems and procedures
 |
| 1. Demonstrate understanding of the physiological systems of fish
 | 1. Fish habitat is identified based on fish species
2. Knowledge on nervous systems of typical fish is demonstrated based on physiological guidelines and standards
3. Knowledge on Circulatory system of typical fish is demonstrated based on physiological guidelines and standards
4. Knowledge on muscle and locomotion of typical fishes is demonstrated based on physiological guidelines and standards
5. Knowledge on Osmoregulation in typical fish is demonstrated based on physiological guidelines and standards
6. Photoperiodism in fish is determined based on fish habitant.
7. Knowledge of feeding in fish is demonstrated as per the taxa.
8. Venomous fish are identified based on fish taxa
 |
| 1. Demonstrate the understanding of fish behaviour
 | 1. Migration behavior of fish identified based on fish species and season.
2. Schooling behavior of fish identified based on fish species
3. Mating/breeding/spawning systems of fish are identified based on fish species
4. Knowledge on fish camouflage based on habit is demonstrated.
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Materials and equipment for identification may include but not limited to:
 | * Micro scopes
* Hand lens
* Dissecting kits
* Taxonomic charts
 |
| 1. Personal protective equipment may include but not limited to:
 | * Gloves
* 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
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Fishing skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Fish behavior
* Fish habitats
* Fishing methods

**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 fish species
2. Demonstrated understanding of the physiological systems of fish
3. Demonstrated the understanding of fish behaviour
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Laboratory
	2. Library
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# PERFORM BREATH HOLD DIVING OPERATIONS

**UNIT CODE:** AGR/OS/FIS/CC/02/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform breath hold diving operations. It involves preparing for dive, performing work during a breath hold dive, employing techniques that reduce underwater hazards and completing post-dive activities.

**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. Prepare for dive
 | 1. Pre-dive plan and work schedule is devised to identify hazards and contingencies according to enterprise procedures and industry guidelines.
2. Equipment is checked to confirm suitability for planned work and serviceability.
3. Diving assistant/observer is briefed on procedures to be used during diving operations.
 |
| 1. Perform work during a breath hold dive
 | 1. Water is entered and a descent is made to the required depth according to accepted diving practice.
2. Ascent from the dive and access to the shore or vessel is made according to industry guidelines and enterprise procedures.
3. Equipment is used to establish working environment.
4. Work is performed under water according to dive plan and enterprise procedures and industry guidelines.
5. Signs and symptoms of injury and other information relevant to the situation are monitored on a continuous basis and used to assess one’s physical condition.
 |
| 1. Employ techniques that reduce underwater hazard
 | * 1. Occupational hazards that may cause injury or harm are assessed and action taken to remove or minimize hazards according to pre-dive plan and enterprise procedures.
	2. Dive procedures used are according to the pre-dive plan and enterprise procedures.
	3. Systems and procedures to reduce hazards are devised and implemented.
 |
| 1. Complete post-dive activities
 | * 1. Post-dive checks are performed on all essential equipment according to enterprise procedures.
	2. Components of diving equipment are maintained to ensure they are working efficiently and safely according to accepted diving practice.
	3. Equipment is stored according to enterprise procedures.
	4. Records are completed in a legible manner and forwarded to supervisor, industry or regulatory body or stored according to enterprise and regulatory 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.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Proceduresmay include but not limited to:
 | * Communication techniques
* Duration of submersion
 |
| 1. Operations may include but not limited to:
 | * Collecting sea animals:
	+ Abalone
	+ Molluscs
	+ Beche-de-mer
	+ Lobster
	+ Sea urchin
* Tending aquacultured animals
* Collecting lost tools and equipment, dead animals, debris
* Checking underwater equipment, nets and other fishing gear
* Installing, servicing and maintaining ponds and associated Equipment
 |
| 1. Diving practice may include but not limited to:
 | * Checking for underwater laminating ear drum barotrauma
* Eliminating reverse blockages
* Eliminating the danger of cold water cramp and hypothermia
 |
| 1. Equipment may include but not limited to:
 | * Wetsuit
* Weights
* Face mask and snorkel
* Fins
* Catch bag
* Safety line.
 |
| 1. Physical condition may include but not limited to:
 | * Ear problems
* Ear drum barotrauma
* Colds, influenza and ear, nose and throat infections
* Squeezes
* Near drowning, salt water aspiration
* Shock from bleeding
* Burns
* Hypothermia
* Hyperventilation
 |
| 1. Hazards may include but not limited to:
 | * + Underwater Dangers Or Snags
	+ Ear Drum Barotrauma
	+ Reverse Blockages, Squeezes
	+ Cold Water Cramp
	+ Hypothermia
	+ Aquatic Animals
	+ Hyperventilation
	+ Lack Of Swimming Ability
* 6.9 Underwater Terrain
 |
| 1. Assessed may include but not limited to:
 | * + Hazards are listed
	+ Causes of hazards is described
	+ An indication of when hazards might occur is given
* Likelihood of the Hazard Occurring Is Described.
 |
| 1. Systems may include but not limited to:
 | * + Briefings
	+ Check in and out
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Conforming with breath hold dive procedures as used by the
* Diver:
* Donning and doffing gear above and below water
* Clearing water from mask
* Clearing squeezes
* Swimming without the effects of current
* Snorkelling
* Identifying occupational hazards underwater
* Perform the work specified in the range of variables applicable to the diving operation
* Diagnosing one’s own physical condition as a result of a dive.

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Dangers of barotrauma, and squeezes
* Dangers of cold water
* Breath holding limitations
* Dangers of hyperventilation
* Organizational procedures

**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. Prepared for dive
2. Performed work during a breath hold dive
3. Employed techniques that reduce underwater hazard
4. Completed post-dive activities
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Suitable swimming area
	2. Diving equipment listed in range of variables
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# APPLY FOOD SAFETY AND SANITATION

**UNIT CODE:** AGR/OS/FIS/CC/03/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to apply food safety and sanitation. It involves wearing Personal Protective Equipment, observing personal hygiene and good grooming, implementing food sanitation practices, rendering safety measures and first aid procedures, implementing housekeeping activities, identify hazards and risks to seafood and aquatic product, follow enterprise hygiene standards, procedures and practices, handle and store seafood and aquatic product and follow the enterprise food safety program.

**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. Wear Personal Protective Equipment
 | 1. Personal protective equipment are checked according to manufacturer’s specifications
2. Personal protective equipment are worn according to the job requirement
 |
| 1. Implement Food Sanitation Practices
 | * 1. Personal hygiene and good grooming is practiced in line with workplace health and safety requirements
	2. Sanitary food handling practices are implemented in line with workplace sanitation regulations
	3. Safety measures are observed in line with workplace safety practices.
 |
| 1. Render Safety Measures
 | * 1. Safety measures are applied according to workplace rules and regulations
	2. First aid procedures are applied and coordinated with concerned personnel according to workplace standard operating procedures.
 |
| 1. Implement housekeeping activities
 | 1. Work area and surroundings are cleaned in accordance with workplace health and safety regulations
2. Waste is disposed according to organization’s waste disposal system
3. Hazards in the work area are recognized and reported to designated personnel according to 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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Manufacturer’s specifications may include but not limited to:
 | * Handling
* Operating
* Discharge Label
* Reporting
* Testing
* Positioning
* Refilling
 |
| 1. Personal Protective Equipment may include but not limited to:
 | * Apron/laboratory gown
* Mouth masks
* Gloves
* Rubber boots/safety shoes
* Head gears such as caps, hair nets, earl plug
 |
| 1. Workplace and Safety Requirements may include:
 | * Health/Medical Certificate
* DOLE requirements
* BFAD requirements
* Personal Hygiene and good grooming
* Plant Sanitation and waste management
 |
| 1. Safety Measures Safety measures may include but not limited to:
 | * Labeling of chemicals and other sanitizing agents
* Installation of firefighting equipment in the work area
* Installation of safety signages and symbols
* Implementation of 5S in the work area
* Removal of combustible material in the work area
 |
| 1. First Aid Procedures First Aid Procedures may include but not limited to:
 | * Mouth to mouth resuscitation
* CPR
* Application of tourniquet
* Applying pressure to bleeding wounds or cuts
* First aid treatment for burned victims
 |
| 1. Hazards in the workplace may include but not limited to:
 | * Physical
* Biological
* Chemical
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Sanitary food handling practices
* Implementing housekeeping activities
* Applying first aid treatment
* Coordination skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Safety Practices
* Proper waste disposal
* Environmental protection and concerns
* Food safety principles and practices
* Good grooming and personal hygiene
* Codes and Regulations
* TQM and other food quality system principles
* ISO, HACCP, EMS, 5S
* Good Food Manufacturing Practices
* Equipment: Uses and Specifications
* Parts and functions of personal protective equipment
* First Aid Kit
* Sanitizing 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. Wore Personal Protective Equipment
2. Implemented Food Sanitation Practices
3. Rendered Safety Measures
4. Implemented housekeeping activities
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Work area/station
	2. First Aid kit
	3. PPE relevant to the activities
	4. Fire extinguisher
	5. Stretcher
	6. Materials, tools and equipment relevant to the unit of competency
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# USE STANDARD MEASURING DEVICES AND INSTRUMENTS

**UNIT CODE:** AGR/OS/FIS/CC/04/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to use standard measuring devices and instruments. It involves identifying standard measuring devices and instruments, reviewing the procedures in using standard measuring devices and instruments and following procedures of using measuring devices and instruments.

**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 Standard Measuring Devices and Instruments
 | 1. Standard measuring devices and instruments are identified according to manufacturer’s specifications
2. Devices and instruments for measuring are properly checked, sanitized and calibrated prior to use
 |
| 1. Review the Procedures in Using Standard Measuring Devices and Instruments
 | 1. Procedures in using the standard measuring devices and instruments are recalled according to manufacturer’s specifications
2. Printed procedures/brochures/catalogues are consulted according to specified food processing methods
 |
| 1. Follow Procedures of Using Measuring Devices and Instruments
 | * 1. Methods/practices of using measuring devices and instruments are strictly observed according to manufacturer’s specifications and workplace requirements
	2. Measuring devices and instruments are cleaned, wiped dry and stored after use to ensure conformity with workplace 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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Standard Measuring Devices
 | Standard Measuring Devices may include but notlimited to the following:1. Weighing scales and balances of various capacities and sensitivities
2. Measuring cups of varying capacities for dry ingredients
3. Measuring cups of varying capacities for liquid ingredients
 |
| 1. Standard Measuring Instruments
 | 1. Salinometer
2. Thermometers of varying temperature range ( 0-300 C)
3. Refractometer of varying range ( 0 – 90 B)
4. Glassware like cylinders, beakers, flasks) of varying graduations
 |
| 1. Food Processing Methods
 | 1. Salting, Curing and Smoking
2. Fermentation and Pickling
3. Canning and Bottling
4. Sugar Concentration
5. Drying and Dehydration
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Calibrating skills
* Sanitary handling of devices and instruments
* Measuring devices and instruments
* Storing measuring devices and instruments

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Safe handling of measuring devices and instruments
* Specifications and functions of measuring devices and instruments and breakages of measuring devices and instruments
* Procedures in cleaning, sanitizing and calibrating and storing equipment and instruments

**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 Standard Measuring Devices and Instruments
2. Reviewed the Procedures in Using Standard Measuring Devices and Instruments
3. Followed Procedures of Using Measuring Devices and Instruments
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Weighing scales and balances of various capacities and sensitivities
	2. Measuring cups of varying capacities for dry ingredients
	3. Measuring cups of varying capacities for liquid ingredients
	4. Salinometer
	5. Thermometers of varying temperature range ( 0-300 C)
	6. Refractometer of varying range ( 0 – 90 B)
	7. Glassware like cylinders, beakers, flasks) of varying graduations
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# IMPLEMENT GOOD MANUFACTURING PRACTICE AND PROCEDURES

**UNIT CODE:** AGR/OS/FIS/CC/05/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to implement good manufacturing practice and procedures. It involves identifying requirements of GMP related to own work, observing personal hygiene and conduct to meet GMP requirements, implementing GMP requirements when carrying out work activities, participating in improving GMP, participating in validation processes and complete workplace documentation to support GMP.

**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 requirements of GMP related to own work
 | 1. Sources of information on GMP requirements are located
2. GMP requirements and responsibilities related to own work are identified
 |
| 1. Observe personal hygiene and conduct to meet GMP requirements
 | 1. Personal hygiene meets GMP requirements
2. Clothing is prepared, used, stored and disposed of according to GMP and workplace procedures
3. Personal movement around the workplace complies with area entry and exit procedures
 |
| 1. Implement GMP requirements when carrying out work activities
 | * 1. GMP requirements are identified
	2. Work area, materials, equipment and product are routinely monitored to ensure compliance with GMP requirements
	3. Raw materials, packaging components and product are handled according to GMP and workplace procedures
	4. Workplace procedures to control resource allocation and process are followed to meet GMP requirements
	5. Common forms of contamination are identified and appropriate control measures are followed according to GMP requirements
	6. The workplace is maintained in a clean and tidy order to meet GMP housekeeping standards
 |
| 1. Participate in improving GMP
 | * 1. Processes, practices or conditions which could result in non-compliance with GMP are identified and reported according to workplace reporting requirements
	2. Corrective action is implemented within level of responsibility
	3. GMP issues are raised with designated personnel
 |
| 1. Participate in validation processes
 | 1. Validation procedures are followed to GMP requirements
2. Issues arising from validation are raised with designated personnel
3. Validation procedures are documented to meet GMP requirements
 |
| 1. Complete workplace documentation to support GMP
 | 1. Documentation and recording requirements are identified
2. Information is recorded according to workplace reporting procedures to meet GMP 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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. OH&S requirements may include but not limited to:
 | * OH&S legal requirements
* Enterprise OH&S policies, procedures and programs
 |
| 1. Work is carried out in accordance with regulations. Regulatory requirements may include but not limited to:
 | * Relevant regulations regarding food processing and food safety regulations
* Department of Health – Food Establishments
* NEMA regulations regarding emissions, waste treatment, noise and effluent treatment and control
 |
| 1. Hygiene and sanitation requirements may include but not limited to:
 | * Department of Health – Food Establishments – Code of Sanitation of the Kenyas (P.D.856)
* Requirements set out by Bureau of Food and Drugs
* Workplace requirements
 |
| 1. Workplace requirements may include but not limited to:
 | * Work instructions
* Standard operating procedures
* OH&S requirements
* Quality assurance requirements
* Equipment manufacturers’ advice
* Material Safety Data Sheets
* Codes ofPractice and related advice
 |
| 1. Responsibility and reporting systems may include but not limited to:
 | * Responsibility for applying Good Manufacturing Practice relates to the person’s work area
* Reporting systems may include electronic and manual data recording and storage systems
 |
| 1. Products may include but not limited to:
 | * Products
* Raw materials
* Packaging components and consumables
* Part-processed product
* Finished product and cleaning 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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* The role of GMP in preventing contamination, its relationship to legislative responsibilities and potential implications of non-compliance
* GMP arrangements in the workplace. This includes awareness of relevant GMP codes of practice and related workplace policies and procedures to implement these responsibilities
* The relationship between GMP and the quality system, personnel responsible for designing and managing GMP, personal role to maintain GMP, the role of internal and external auditors as appropriate
* Procedures followed to investigate contamination events and performance improvement processes
* Personal clothing and footwear requirements for working in and/or moving between work areas
* Personal clothing use, storage and disposal requirements
* Awareness of common micro biological, physical and chemical contaminants relevant to the work process.
* Basic concepts of quality assurance including quality specifications, operating parameters, validation procedures and control methods.
* Control methods and procedures used in the work area to maintain GMP. This includes an understanding of the purpose of control, the consequences if not controlled and the method of control where relevant.
* GMP responsibilities and requirements relating to work role

**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. Located and followed workplace information relating to GMP responsibilities
2. Maintained personal hygiene consistent with GMP
3. Followed workplace procedures when moving around the workplace and/or from one task to another to maintain GMP
4. Used, stored and disposed of appropriate clothing/footwear as required by work tasks and consistent with GMP
5. Identified and reported situations that do or could compromise GMP
6. Applied appropriate control measures to control

contamination1. Recorded results of monitoring, and maintain records as required by GMP
2. Followed validation procedures within level of responsibility
3. Identified and responded to out-of-specification or unacceptable raw materials, packaging components, final or part processed product within level of responsibility
4. Followed procedures to isolate or quarantine nonconforming product
5. Handled, cleaned and stored equipment, utensils, raw materials, packaging components and related items according to GMP and workplace procedures
6. Maintained GMP for own work
7. Handled and/or disposed of out-of-specification or contaminated materials, packaging components/consumables and product, waste and recyclable material according to GMP as required by work responsibilities
8. Maintained the work area in a clean and tidy state
9. Identified and reported signs of pest infestation
 |
| 1. Resource implications
 | The following resources must be provided:* 1. GMP manual
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Portfolio of evidence
	4. Oral questioning
	5. Interview
	6. Observation
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# PREVENT AND FIGHT FIRE

**UNIT CODE:** AGR/OS/FIS/CC/06/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to prevent and fight fire. It involves managing fire prevention procedures, operating portable firefighting equipment, conducting interior search and rescue and fire-fighting operations.

**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. Manage fire prevention procedures
 | 1. Fire hazards on board a vessel are identified and action is taken to eliminate or minimize them
2. Fire detection and firefighting equipment and systems are regularly checked and appropriate action is taken to ensure that they are operational
3. Appropriate educational activities are organized to ensure onboard personnel are aware of the dangers of fire, how to prevent it and what to do if a fire is detected
4. Personnel on board a vessel are made aware of emergency procedures to be followed in the event of fire
 |
| 1. Operate portable firefighting equipment
 | 1. Classes of fires are correctly identified in accordance with accepted fire-fighting practice
2. Correct portable fire-fighting equipment is selected and used to fight specific classes of fires
3. Methods of extinguishing fire on board a vessel are correctly applied
4. Correct techniques are used to recharge the various types of portable fire extinguisher
5. Where applicable, portable fire-fighting equipment is confirmed as operational following recharging
 |
| 1. Conduct interior search and rescue and fire-fighting operations
 | * 1. Procedures for donning and starting up SCBA / CABA are correctly applied
	2. Procedures for the logging of SCBA / CABA operations on a BA Control Board is correctly followed in accordance with vessel’s procedures and accepted fire-fighting practice
	3. Search and rescue operations in a smoke filled environment are correctly conducted as a member of a fire-fighting team in accordance with accepted fire-fighting practice
	4. Interior fires are extinguished using appropriate firefighting equipment and procedures as a member of a firefighting team in accordance with accepted fire-fighting practice
	5. Lifeline signals are correctly used during interior firefighting operations
	6. A compartment filled with high expansion foam is correctly entered as per accepted fire-fighting practice
 |

**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.

|  |  |
| --- | --- |
| **Variables** | **Range** |
| 1. Classes of Fire may include but not limited to:
 | **Class A**All solid materials, usually organic origin in nature (contains compounds of carbon) and generally produce glowing embers– i.e., wood, textiles, curtains, furniture and plastics.Class BAll flammable liquids and solids, which can also be subdivided into :Miscible with water (i.e., petrol, oils, lubricants, paints and waxes)Non-miscible with water ( e.g., alcohol)Class CFires involving domestic main gas, cylinder gases (e.g. Acetylene) or Liquid Petroleum Gases (LPG) such as Butane or Propane)Class DFires involving metals (where water is generally ineffective and dangerous) i.e., metal powders such as magnesium, titanium, and alloys, etc.Class FNew class specifically dealing with high temperature (360 degrees centigrade) cooking oils in large industrial catering kitchens, restaurants and takeaway establishments, etc.ElectricalElectrical fires are not considered to constitute a fire class on their own, as electricity is a source of ignition that will feed the fire until removed. When the electrical supply has been isolated. The fire can be treated (generally) as Class A for extinguishing purposes. However, you should use a nonconducting agent on all possible occasions |
| 1. Fire detection and firefighting equipment and system may include but not limited to**:**
 | Portable fire extinguisher including foam, water, CO2, dry chemical and wet foamFire blanketsC02 fixed systemFoam installation including semi-portable and fixed systemSprinkler systemFire pumps (main and emergency fire pumpFire hoses, hydrants, branches and international shore connection |
| 1. Methods of extinguishing fire may include but not limited to**:**
 | CoolingReducing the ignition temperature by taking the heat out of the fire – using water (limiting the temperature)SmotheringLimiting the oxygen available by smothering and preventing the mixture of oxygen and flammable vapor – by use of foam or a fire blanketStarvingLimiting the fuel supply – by removing the source of fuel ; by switching off electrical power, isolating the flow of flammable liquids or pulling away burning wood or straw, etc.Chemical ReactionBy interrupting the chain of combustion and combining the hydrogen atoms with chlorine atoms in the hydrocarbon chain, e.g. Halons extinguisher (NB: Halons have now generally been withdrawn under the Montreal Protocol of 1990, as ozone depleting agents) |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Procedures in checking and replacing consumable materials in typical ship board fire detection, fire-fighting and safety equipment and system
* Procedures in identifying and evaluating operational and maintenance problems with fire-detection, firefighting, lifesaving and safety equipment and systems and determining appropriate courses of action
* Procedures in identifying and implementing improvements to maintenance for fire-detection and fire-fighting.
* Procedures on on-board housekeeping processes.

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Chemistry of fire and its relationship to materials typically carried on vessels
* Types of fire detection, firefighting, lifesaving and safety equipment and systems used on board vessels and the procedures for their use
* Relevant regulations, code of practice, policies and procedures related to the maintenance of fire detection, firefighting, lifesaving and safety equipment and system
* Faults that can occur with shipboard fire detection, firefighting, lifesaving and safety equipment and appropriate remedial action and solutions
* Statutory and typical company requirements for the documentation of maintenance procedures and outcomes for fire detection, firefighting, lifesaving and safety equipment and systems used on board vessels

**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. Managed and implemented fire prevention measures and procedures on board a vessel
2. Assessed the operational capability of fire detection and firefighting equipment and systems and initiate any required maintenance or replenishment action
3. Participated in simulated on board firefighting activities
4. Participated in search and rescue and firefighting teams
5. Implemented OHS principles and policies when carrying out firefighting duties
6. Communicated effectively with others as required during fire emergencies
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Work place location
	2. Tools and equipment appropriate to schedule housekeeping activities and to monitor and maintain working condition
	3. Material relevant to the proposed activity and tasks
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# PROTECT AQUATIC ENVIRONMENT

**UNIT CODE:** AGR/OS/FIS/CC/07/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to protect aquatic environment. It involves identifying waste disposal procedures, perform waste segregation and record waste segregation.

**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 waste disposal procedures
 | 1. Relevant guidelines for the implementation of waste disposal onboard are identified and applied to ensure protection of marine environment
2. Relevant company requirements on marine environmental protection is followed as per established practice
3. Appropriate measures to prevent operational pollution are observed and applied to prevent pollution of the marine environment in accordance with regulations and procedures
4. Compliance on state waste disposal procedures for the protection of the marine environment is monitored and required action is taken where incidences of non-compliance are identified
 |
| 1. Perform waste Segregation
 | 1. MARPOL Regulations and procedures concerning protection of marine environment are adequately followed regarding segregation of waste
2. Marine environment protection programs on board are applied as per established practice
3. Any breach of regulations and procedures concerning protection of the marine environment are identified and associated actions are taken in accordance with regulatory requirement and procedures
4. Deck rating are provided with necessary information and training to ensure compliance with regulations and procedures for the protection of marine environment
 |
| 1. Record waste segregation
 | * 1. Others are assisted and encouraged to observe the waste segregation policies
	2. Social responsibilities in waste disposal are observed and performed to ensure protection of marine environment
	3. Contents of report on waste segregation and disposal are adequately filled-up as per established 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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Guidelines for the implementation of waste disposal onboard may include but not limited to:
 | * Incineration option for shipboard generated waste
* All kinds of victual, domestic and operational waste excluding fresh fish and parts thereof
* Waste for which there is a total prohibition on discharge into the sea
 |
| 1. Measures to prevent operational pollution by waste may include but not limited to:
 | * All plastic including but not limited to synthetic ropes, synthetic fishing nets and plastic waste bags
* Disposal of any materials regulated by Annex V (Waste)
* Fixed floating flat form engaged in exploration and associated offshore processing of seabed mineral resources
* Disposal into the sea of food wastes may be permitted when they have been passed through comminuter or grinder for such fixed or floating plat forms
 |
| 1. Contents of the report on waste segregation and disposal may include but not limited to:
 | * Report must be sent to the nearest coastal state
* Contents of report must include
	+ Name of Ship, call sign and flag
	+ Type of Ship and Tonnage
	+ Cargo carried
	+ Date in Time
	+ Position, Course, Speed at time of incident
	+ Radio Channel Guarded
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Procedures for checking waste coding on waste segregation
* Procedures for the disposal of food waste based on relevant MARPOL regulation
* Procedures on ship-generated waste on non-bio-degradable materials

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Knowledge of sections of relevant regulation on waste segregation and disposal
* Safety, environmental and hazard control precautions and procedures relevant to MARPOL regulations
* Storage of non-bio-degradable materials onboard
* Relevant ISM regulations

**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. Exhibited all required safety environmental and garbage control procedures
2. Performed garbage segregation and proper disposal
3. Complied with existing company regulations and relevant

MARPOL regulation1. Assisted in incineration procedures
2. Communicated effectively with other concerning measures to protect the marine environment
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Work place location
	2. Tools and equipment appropriate in protecting marine environment
	3. Material relevant to the proposed activity and tasks
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# CORE UNITS OF COMPETENCY

# PERFORM FIRST AID TREATMENT ON BOARD

**UNIT CODE:** AGR/OS/FIS/CR/01/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform first aid treatment on board. It involves performing immediate lifesaving first aid pending the arrival of medical assistance, recognizing the symptoms and acute illness and or injury and take appropriate action, managing wounds and bleeding, managing burns, managing bone, joint and muscle injuries and adapt first aid procedures for remote situations.

**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. Perform immediate lifesaving first aid pending the arrival of medical assistance
 | 1. The priorities of First Aid Care are correctly applied in real or simulated first aid situation
2. The DRABC Action plan is correctly used to identify and control danger, loss of consciousness, loss of airway, breathing and circulation
3. An unconscious casualty is correctly placed in stable side position and the steps in clearing the airways to promote breathing in accordance with established first aid procedures
4. The correct method of Expired Air Resuscitation (EAR), External Cardiac Compression (ECC) and Cardio Pulmonary Resuscitation (CPR) is applied in real life resuscitation situation or in a simulated exercise using a mannequin
 |
| 1. Recognize the

symptoms and acute illness and or injury and take appropriate action | 1. The conditions requiring special first aid procedures are correctly identified
2. A real or simulated unconscious casualty is cared for in accordance with established first aid procedures
3. Causes of respiratory failure and breathing difficulty are correctly identified and appropriate care is provided for a real or simulated casualty with obstructed breathing
4. The symptoms and signs of casualty with angina pain, heart attack and heart failure are correctly identified
5. The symptoms and signs of poisoning, bites and stings are correctly identified and appropriate immediate management of the conditions is provided in real or simulated situation
6. A real or simulated conscious casualty with an acute illness and or injury is cared for in accordance with established first aid procedures
 |
| 1. Manage wounds and bleeding
 | 1. The symptoms and signs of severe internal bleeding are correctly identified and immediately managed.
2. Severe external bleeding is correctly controlled in a real or simulated situation
3. A real or simulated laceration, abrasion and a deep puncture wound is correctly manage in accordance with established first aid procedures
4. The signs of wound infections are correctly identified and a real or simulated wound infection is correctly managed in accordance with established procedures
 |
| 1. Manage burns
 | 1. The severity of burn is correctly assessed in terms of depth, position and size in accordance with established procedures
2. Immediate rescue procedures are correctly used in real or simulated first aid situations involving a burned casualty
3. The correct method of treatment for burns and associated shock is correctly applied in real or simulated first aid situations involving a burned casualty
 |
| 1. Manage bone, joint and muscle injuries
 | 1. Symptoms and signs of fractures (simple and complicated) are correctly recognized in accordance with established first aid procedures
2. Problems and treatment associated with dislocated joints are correctly managed in accordance with established procedures
3. First aid treatment of pelvic and chest injuries and fractures of limbs, including immobilization techniques is correctly performed in accordance with established procedures
4. The symptoms and signs of sprains and strains are correctly identified in accordance with established procedure
 |
| 1. Adapt First Aid Procedures for ***Remote Situations***
 | 1. Risk in Emergency situations is correctly assessed in accordance to first aid procedures
2. First aid resources are correctly mobilized in accordance with established procedures
3. Operating procedures during emergencies are correctly followed in accordance to first aid 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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. First aid Care on
	1. Board a vessel may
	2. Need to be provided
	3. In situation involving may include but not limited to:
 | * Acute illness or injury
* Laceration, abrasion and a deep puncture wounds
* Respiratory failure and breathing difficulty
* Shock as a result of severe injury
* Abdominal, pelvic and chest injuries
* Fractures of limbs
* Poisoning, bites and stings
* Sprains, strains and dislocations
* Facial, ear and eye injuries
* Suspected head, neck and back injuries
 |
| 1. Conditions requiring special first aid procedures may include but not limited to**:**
 | * Explosion injuries
* Burns
* Poisons and envenomation
* Hypothermia and hyperthermia
 |
| 1. First aid resources and equipment may include but not limited to**:**
 | * Vessels/ medicine cabinet
* Complete and operational first aid kit
* Emergency first aid carry bags
* Specific first aid resources
* Roller bandages
* Triangular bandages
* Face masks
* Cleaning swabs
* Cleaning brush
* Cleaning materials
* Medicines
* Vessel’s Medicine Cabinet
* First Aid Boxes
* Emergency first aid carry bags
 |
| 1. Remote Situations **may include but not limited to:**
 | * Where there no medical personnel on board
* Medical facility not within reach
* When the vessel breaks down in far flung locations
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Medical first aid procedures
* Procedures for conducting an initial patient first aid treatment
* Managing injuries and medical emergencies
* Managing medicine resources
* Techniques for care of wounds
* Correct methods of Expired Air Resuscitation (EAR), External
* Cardiac Compression (ECC) and
* Cardio Pulmonary Resuscitation (CPR)

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Duties and responsibilities of the designated first aid officer on board a vessel
* Knowledge on ways in which disease can spread on board a vessel and ways of preventing the spread
* Legal issues related to administration of drugs and medicines on board a vessel
* Knowledge of body structures and functions relevant to possible injury, illnesses and disease that may be encountered on board a vessel
* Maritime communication techniques related to health care and receiving radio medical advice from shore based advisers
* Marine publications containing information on first aid and medical treatment on board a vessel

**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. Recognized the symptoms and signs of acute illness and or injury and take appropriate action
2. Performed immediate lifesaving first aid
3. Managed wounds and bleeding
4. Managed burns
5. Managed bone, joints and muscle injuries
6. Adapted first aid procedures for remote situation
7. Communicated effectively with others during provision of first aid.
8. Prepared report on first aid situations and activities in accordance with company and regulatory requirements
 |
| 1. Resource implications
 | The following resources must be provided:1. Vessels/ medicine cabinet
2. Complete and operational first aid kit
3. Emergency first aid carry bags
4. Specific first aid resources
5. Roller bandages
6. Triangular bandages
7. Face masks
8. Cleaning swabs
9. Cleaning brush
10. Cleaning materials
11. Medicines
12. Vessel’s Medicine Cabinet
13. Emergency first aid carry bags
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:1. On-the-job
2. Off-the–job
3. During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# TRANSMIT AND RECEIVE INFORMATION ON RADIO, TELEPHONE AND VESSEL MONITORING SYSTEM (VMS)

**UNIT CODE:** AGR/OS/FIS/CR/02/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to transmit and receive information on radio, telephone and vessel monitoring system. It involves operating VHF and HF radio equipment to transmit and receive messages, maintaining and faultfinding radio equipment, accessing, searching and rescuing facilities, deploying and operating an EPIRB and a SART

**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. Operate VHF(very high frequency) and UHF(Ultra High frequency) radio equipment
 | 1. Types of radio equipment are selected and operated within limits of specifications
2. Radio equipment is operated to transmit and receive various types of signal in accordance with manufacturer’s instructions, established radio operation procedures and regulatory requirements
3. Regulations and procedures applicable to vessel stations equipped with radiotelephony and digital selective calling (DSC) facilities are applied during radio communications
4. OHS procedures and hazard control strategies are applied when operating radio equipment in accordance with vessel’s ISM Code safety management system
 |
| 1. Maintain and fault find radio and VMS equipment
 | * 1. Routine maintenance checks are carried out on radiotelephony equipment in accordance with manufacturer’s instructions and specifications and company procedures
	2. Out-of-specification performance and faults in radio equipment are correctly identified and investigated in accordance with established user maintenance procedures and manufacturer’s instructions
	3. Identified faults and defective radio equipment and component parts are rectified or replaced in accordance with manufacturer’s instructions and established maintenance procedures.
	4. Collected records of radio and VMS communication are maintained
 |
| 1. Access search and rescue facilities
 | 1. Application is made to the appropriate organization for the provision of the required search and rescue services
2. Information required by GMDSS(Global maritime distress and safety system) system is supplied in the required format
 |
| 1. Deploy and operate

an EPIRB and a SART | 1. Routine checks are carried out on Emergency Position Indicating Radio Beacons (EPIRBs) and Search and Rescue Transmitters (SARTs) as per manufacturer’s instructions and specifications
2. Appropriate action is taken to rectify or replace EPIRBs or SARTs in accordance with manufacturer’s instructions and company procedures
3. Emergency Position Indicating Radio Beacons (EPIRBs) and Search and Rescue Transmitters (SARTs) are deployed in accordance with manufacturer’s instructions and established search and rescue procedures
4. Collected records of radio and VMS communication are maintained
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Radio and radiotelephony communications may be carried out may include but not limited to:
 | * in both normal and emergency situations using shipboard HF and VHF radio equipment, Emergency Position Indicating Radio Beacons (EPIRBs) and SARTs
 |
| 1. Radio and radiotelephony communications may be carried out may include but not limited to:
 | * Day or night in both normal and emergency situations
* Under any possible conditions of weather
* While underway
* While anchored or moored
 |
| 1. Radio equipment may include but not limited to:
 | * Radiotelephony trans receiving equipment
* Medium frequency / high frequency equipment (MF/HF)
* Very high frequency equipment (VHF)
* Digital selective calling (DSC) equipment
* Emergency Position Indicating Radio Beacon (EPIRB)
* Search and Rescue Transmitter (SART)
* Batteries
* Aerials
* Electrical and radio cable connections
* Electrical fuses
 |
| 1. Radio communications may include but not limited to:
 | * Distribution and securing procedures
	+ Normal vessel-to-vessel service
	+ Normal vessel-to-shore service
* On-demand service
* Auto sea phone service
* Auto sea phone 999 service
	+ Distress
	+ Urgency
	+ Safety
	+ Navigational
	+ Medical advice
	+ Emergency position signals
 |
| 1. Government requirements may include but not limited to:
 | * Relevant government legislation, regulations and orders (including pertinent Marine regulations and related memorandums)
* Radio Regulations adopted by the World Administrative Radio Conference for the Mobile Service (1987),
 |
| 1. Appropriate organizations with whom radio communications may be conducted may include but not limited to:
 | * Coast stations
* Limited coast stations
* Private shore stations
* Volunteer coast guard stations
* Search and rescue coordination Centre location and operator
* State police forces
* Company bases
* Fishing organizations and cooperatives
* International partners
 |
| 1. Available radio services may include but not limited to:
 | * Medical advice services
* Search and rescue
* Public correspondence
 |
| 1. EPIRB frequencies may include but not limited to:
 | * 406 MHz
* 21.5 / 243 MHz
 |
| 1. Sources of information / documents may include but not limited to:
 | * Sections of IMO STCW 95 Code concerning radio communications
* Relevant government legislation, regulations and orders radio communications
* Radio communications log
* Radio equipment manufacturer’s specifications and instructions
* Records of radio communications
 |

**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:

* Organization skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Transmitting and decoding of the phonetic alphabet excluding
* The figure code
* Checking of radio performance
* Testing fuses
* Measuring capacity of batteries and the specific gravity of the
* Electrolyte
* Measuring on and off load voltage.
* Keeping records of radio
* Communications
* Deploying and operating EPIRBS and SARTS
* Literacy skills used for:
* Oral communications when using marine radios
* Keeping records of radio communications.

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Knowledge of sections of relevant regulations related to
* marine radio communications
* Different types of marine radio equipment, their features, applications, operating characteristics and operating procedures
	+ Basic principles and procedures for marine radio communications Purpose for and procedures for the monitoring of calling and working frequencies Purpose of silence periods when operating radio equipment
* Limitations on the performance of different types of marine radio equipment
* Hazards associated with radio transmission and the repair and maintenance of radio equipment and related hazard control
* Measures and OHS regulations.
	+ A basic understanding of the Kenya marine search and
* rescue system
* Procedures for the transmitting and decoding of the phonetic alphabet excluding the figure code
* Typical radio equipment faults and defects and related fault finding techniques and remedial procedures
	+ Procedures for deploying and operating EPIRBs and SARTs
* Typical radio communications problems and appropriate action and solutions
	+ Procedures for keeping records of radio communications

**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. Operated VHF and HF radio equipment to transmit and receive messages
2. Maintained and fault-find radio equipment
3. Accessed search and rescue radio facilities
4. Deployed and operated an EPIRB and a SART
5. Maintained records of radio and VMS communications
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Suitably-simulated radio communications situations that are typically experienced on a vessel, and/or
	2. An appropriate range of operational radio communications situations on board an operational commercial or training vessel
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# MANAGE SMALL FISHING VESSELS

**UNIT CODE:** AGR/OS/FIS/CR/03/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage small fishing vessels. It involves operating marine vessels, monitoring condition and seaworthiness of a vessel, performing routine maintenance tasks on small marine vessels, troubleshooting and maintaining low powered marine engines and applying weather information when navigating a Vessel.

**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. Operate marine vessels
 | * 1. Gathered ***tools, equipment*** and ***materials*** based on task requirement
	2. ***PPEs*** identified and gathered based on task requirements
	3. ***Safety measures*** adhered to in relation to marine vessels
	4. Engine oil levels in the outboard engine determined based on the distances to be covered and extent of task requirement
	5. Marine vessel is navigated and piloted through water body
	6. The rules of the navigation paths are maintained based on the water and atmospheric conditions and traffic density
	7. ***Safe speed/limit*** is maintained based on factors determined by marine and atmospheric conditions
	8. ***Boat handling skills*** demonstrated in safely bringing the vessel back to the landing beach
	9. Applicable forces acting on the boat are identified based on marine and atmospheric conditions
 |
| 1. Monitor condition and **seaworthiness of a vessel as per Kenya Maritime Authority regulations**
 | * 1. Hull conditions are inspected for any visible damage and leakages
	2. Vessel appliances are inspected for functionality and working conditions
	3. The crew members are assessed for competence on use of facilities in the vessel
	4. Working conditions in the vessel is assessed based on task performed by the crew
 |
| 1. Perform ***routine maintenance*** tasks on a small marine vessels
 | * 1. Hull surface regularly cleaned using appropriate detergent and cleaning agents
	2. Dry docking is undertaken to inspect the vessel condition
	3. Vessels dried in the sun to allow for maintenance to commence
	4. Repair and replacement of worn out part(s) undertaken based on extent of damage
	5. Lubrication of moving parts of the vessel and accessories undertaken based on manufacturers specifications
	6. Painting of the hull and some accessories is done based on clients’ preferences and requirements for marine conditions
 |
| 1. Troubleshoot and maintain low powered marine engines
 | * 1. Engine is physically observed for any physical damages on the surface
	2. Engine is started and observations made based on performance indicators
	3. Spark plugs removed, cleaned and inspected for signs of quality deterioration
	4. Defective plugs are replaced based on manufacturers specifications
	5. Gear case oil levels are checked based on specified levels
	6. Engine is cleaned and refinished and painted using marine enamel based on the prevailing marine conditions
	7. Battery is checked for full charge terminals cleaned
	8. Propeller is checked for correct pitch based on manufacturer’s specifications
	9. Worn out propeller blades are replaced as per manufacturer’s specifications
	10. Grease fittings are lubricated based on manufacturer’s recommended lubricants.
	11. The engine is test run on test tank for functionality before installation on a boat.
 |
| 1. Apply weather information when navigating a Vessel
 | * 1. Obtain and decipher weather and oceanographic information
	2. Maintain records of weather and oceanographic information and forecasts.
	3. Apply weather and oceanographic data to safe navigation
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. *PPEs* may include but not limited to:
 | * Navigation equipment
* Safety boots
* Dust and fume masks
* Rinsing and storing equipment
 |
| 1. Safety equipment and spares may include but not limited to:
 | * Communications equipment
* Bailing or bilge pumping arrangements
* Fire extinguishers 3.4 personal floatation devices
* Alternative sources of propulsion and steering
* Anchoring devices
* Bilge removal systems
* Distress signaling devices: including flares, flags, signaling mirrors, other methods
* Water
* Tools and spare parts
* Torch and batteries
 |
| 1. Safety Measures may include but not limited to:
 | * Distribution and securing procedures
* Passengers
* Catch
* Cargo:
	+ Fishing gear
	+ Diving equipment
	+ Oyster farm equipment
	+ Aquaculture nets and gear
* Stock feed
* Monitoring equipment.
 |
| 1. Safe Speed may include but not limited to:
 | * Distance from supervision
* Distance from safe haven
* Operational limits (municipal or city waters)
* Speed limits
* Sectors
* Proximity to dangers
* Range of fuel tank
 |
| 1. Navigation may include but not limited to:
 | * Using propulsion motor
* Using outboard motor
* Using oars
* Using sails
* Alternative steering
 |
| 1. Boat handling skills may include but not limited to:
 | * Maneuvering in confined areas or heavy seas
* Towing
* Approaching a beach or landing
* Recovering person overboard
* Search and Rescue (SAR)
 |
| 1. Routine maintenance may include but not limited to:
 | * By controlling corrosion
* By controlling hull fractures and fatigue
* By controlling hull damage
* Cleanliness
 |
| 1. Seaworthiness of a vessel may include but not limited to:
 | * By day or night in both normal and emergency situations
* Under any possible conditions of sea, weather and loading
* While underway
* During berthing and unberthing operations
* While anchoring or mooring
* During dead on water (drifting)
* At all times when the vessel is at operational status
 |
| 1. Action taken to monitor the condition and seaworthiness of a vessel will depend on the limits of responsibility of the person concerned may include but not limited to:
 | * Routine inspections
* Checks prior to departure
* Checks on completion of a voyage
* Checks on completion of maintenance activities
* Checks in anticipation of a
* Change in sea and weather conditions
* Use of testing equipment to check watertight integrity
* Checks during an emergency which may have caused damage or changes to the seaworthiness of the vessel
 |
| 1. Repairs and maintenance procedures for a vessel will depend on the limits of responsibility of the person concerned may include but not limited to:
 | * Repairs to equipment, components, hull and vessel’s structure
* Surface preparation and painting (routine deck maintenance)
* Underwater inspection to determine marine growth in the hull
* Lubrication
* Replacement of faulty equipment or components
* Inspection/repair of main propulsion
 |
| 1. Documentation may include but not limited to:
 | * Procedures for monitoring of the condition and seaworthiness of vessel
* Vessel and equipment manufacturer’s instructions, specifications and recommended procedures
* Maintenance schedules and records
* Instructions of Kenya maritime authorities related to the seaworthiness of vessels
* Vessel’s license to operate
 |
| 1. Maintenance tools and equipment may include but not limited to:
 | * Hand tools including chipping hammers and scrapers
* Electric power tools such as grinders, sanders and drills
* Pneumatic power tools such as grinders, sanders and drills
* Marine preservative finish application equipment such as brushes, spay guns, rollers
* Rinsing and storing equipment
* Personal protection clothing and equipment such as:
	+ Eye and ear protection
	+ Safety boots
	+ Dust and fume masks including various cartridges
 |

**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:

* Vessel navigation skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Adjusting gear components to improve performance
* Icing
* Numeracy skills
* Reading operating instructions for electronic detection
* Equipment.

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Post mortem changes in fish
* Fish harvesting methods
* Fish preservation methods
* Fish movement behavior,
* Water current movement patterns

**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 PPEs are as per task requirements.
2. Tools, equipment and materials are gathered as per task requirements
3. Maneuvered a small vessel while engaged in common tasks
4. Performed basic deck maintenance
5. Carried out cleaning activities
6. Selected and applied appropriate paint systems for areas aboard a vessel
7. Checked and performed basic maintenance on deck fittings, equipment and systems
8. Exercised all required safety, environmental and hazard control precautions and procedures during planned maintenance operations
9. Communicated effectively with others when carrying out maintenance procedures onboard a vessel
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Fully operational fishing boat with fishing gears
	2. Enterprise procedures
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
	6. Portfolio of evidence
 |
| 1. Context of Assessment
 | Assessment could be conducted:1. On-the-job
2. Off-the–job
3. During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# MANAGE OUTBOARD MOTORS

**UNIT CODE:** AGR/OS/FIS/CR/04/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to Operate and maintain marine outboard motors. It involves operating outboard motors, maintaining outboard motors, repair and basic outboard motor faults.

**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. Operate outboard

motors | 1. ***Pre-start*** checks are performed on the motor as per manufacturer’s guidelines.
2. Outboard motors are ***started*** and stopped according to the engine manufacturer’s instructions.
3. Outboard motor ***controls*** are used to maneuver according to the engine manufacturer’s instructions.
4. Outboard motor cooling systems are ***checked*** according to manufacturer’s recommendations.
5. Trim and tilt mechanisms are operated according to manufacturer’s instructions.
 |
| 1. Maintain outboard

motors | 1. Fuel filters are changed and ***fuel quality*** is maintained according to manufacturer’s instructions.
2. Electrical systems are maintained to ensure reliable electrical supply to the outboard motor.
3. Water is flushed from the internal and external parts of the outboard motor as per manufactures guidelines
4. Engine and gearbox oil is checked, changed and lubricated according to manufacturer’s instructions.
5. Engine mounting gear is secured and checked as per manufactures guidelines
 |
| 1. Repair

basic outboardmotor faults | * 1. Fuel-related difficulties are identified and rectified according to trouble shooting guides and manufacturer’s instructions.
	2. Electrical faults are identified and rectified according to trouble shooting guides and manufacturer’s instructions.
	3. Outboard engines that were immersed are serviced according to manufacturer's instructions.
	4. Outboard motor ***propulsion faults*** are identified and rectified according to manufacturer’s instructions.
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Pre-start checks may include but not limited to:
 | * Amount of fuel in the fuel tank
* Appropriate fuel
* Water depth
* Cooling water intake submerged
* Motor attachment points
* Fuel hose connected, full and free of constrictions
* Fuel tank depressurized.
 |
| 1. Started may include but not limited to:
 | * Pull start
* Electric start
 |
| 1. Controls may include but not limited to:
 | * Remote throttle and gear levers
	+ Tiller
	+ Steering wheel
* Tilt and trim mechanisms
 |
| 1. Checked may include but not limited to:
 | * Cooling water circulation indicator
	+ Temperature gauge
* Temperature warning sound
 |
| 1. Fuel quality may include but not limited to:
 | * By estimating fuel consumption at turning points
* Contamination
	+ Fuel to oil ratio
	+ Filter type and quality.
 |
| 1. Propulsion faults may include but not limited to:
 | * Bent or broken propeller
* Broken shear pin or drive spline
* Fouling Pitch.
 |
| 1. Standard Instructions may include but not limited to:
 | * Motor manufacturer’s instructions and recommended procedures
* Instructions of Kenya maritime authorities
 |
| 1. Government and international requirements may include but not limited to:
 | * Relevant Kenyan Government legislation, regulations and Orders and international requirements related to the operation and maintenance of outboard motors on coastal vessels.
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* checking, operating and maintaining an outboard motor that is
* used to propel a small vessel
* Literacy skills used for:
* Reading trouble shooting charts
* Reading manufacturers’ instruction manuals.
* Numeracy skills used for:
* Calculating fuel to oil ratios or using tables to find and add
* Correct volume of lubricating oil
* Estimating fuel consumption and time at turning points

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Relevant Marina regulations and related memorandums
* Outboard motor fuel systems
* Outboard motor cooling systems
* Outboard motor lubrication systems
* Battery connection
* Trouble shooting
* International Convention for the Prevention of Pollution from Ships (MARPOL) requirements.

**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. Operated and maintained outboard motors and be able to
2. Diagnose and rectify basic faults when in isolated situations
3. Started and stopped an outboard motor
4. Operated all controls on an outboard motor to propel a dinghy ahead and astern
5. Performed basic maintenance on an outboard motor
6. Stored an outboard motors
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Fully operational vessel, and or
	2. An appropriate simulation of an outboard motor on a small vessel
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 1. Context of Assessment
 | Assessment could be conducted:1. On-the-job
2. Off-the–job
3. During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# HANDLE HARVESTED FISH

**UNIT CODE:** AGR/OS/FIS/CR/05/6/A

**Unit description**

This unit specifies the competencies required to handle harvested fish.it involves preparing harvested fish, preserving harvested fish, processing harvested fish, packaging fish and fish products , marketing fish, fish products and by-products and managing waste from fish processing.

|  |  |
| --- | --- |
| **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. Prepare harvested fish
 | * 1. ***Tools, equipment and materials*** are assembled in line with task requirements
	2. **PPEs** are identified and gathered as per task requirements
	3. Harvested fish is graded according to size and species as per the target market
	4. Fish is cleaned to remove all slime and foreign materials
	5. Fish is scaled as per target market requirements
	6. Fish is gutted to remove visceral material without rupturing
	7. Gutted fish is cleaned to remove blood stains and gut remains from stomach cavity
	8. Tools, equipment and materials used are cleaned as per standard sanitary operating procedures and stored in designated places
 |
| 1. Preserve harvested fish
 | * 1. Fish meant for short term preservation is kept in appropriate containers with ice in alternate layers following standard icing procedures
	2. Fish meant for long term preservation is smoked, sundried, salted or frozen depending on market preference
 |
| 1. Process harvested fish
 | * 1. Harvested fish products value is added as per the standard operating procedures.
	2. ***Fish by-products*** for sale are identified, collected and sorted into containers, based on market specifications
	3. Fish by-products for sale are processed based on their form and nature.
	4. ***Packaging tools, equipment and materials*** are assembled in line with task requirements
	5. Processed fish products and by-products are packaged using material appropriate to type, size and weight of the product or by-product
	6. Packaged product or by-product is labeled according to statutory regulations and target market requirements
	7. Packaged products or by-products are stored in designated areas using the FIFO approach
	8. Storage conditions of stored fish products and by-products are monitored regularly
 |
| 1. Package fish and fish products
 | * 1. Package material are identified as per fish processing method and market
	2. Fish product are grouped as per standard operating procedures
	3. Fish product packs are labeled as per market requirnment
	4. Fish products are stored as per the market specification.
 |
| 1. Market fish, fish products and by-products
 | * 1. Price of fish and fish products is determined based on costs of production, demand and supply and price of alternative products.
	2. Market outlets are identified and contacted
	3. Appropriate mode of transport to market is determined according to product form and quantities, and distance to market
	4. Fish, fish products and by-products are sold at a profit
	5. Product handling is carried out according to hygienic standards set out in KEBS code of hygienic standards for fishery products
	6. Records of harvest and sales proceeds are maintained
 |
| 1. Manage waste from fish processing
 | * 1. Collect and separate fish processing wastes according to their physical state.
	2. Dispose of solid and liquid wastes according to the environmental management and coordination (waste management) regulations 2006.
 |

**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 include but not limited to |
| 1. PPEs **may include but not limited to:**
 | * Gum boots, head cover, gloves, dust coats, first aid kits, mouth piece, apron
 |
| 1. Tools, equipment and materials **may include but not limited to:**
 | * Basins, buckets, hard brush, filleting tables, knives, waste disposal containers, ice box, smoking kiln, solar dryer, drying racks, drying mats or canvass, domestic freezers, ice, salt, frying oil, meat mincer, blender, crockery,
 |
| 1. Fish by-products **may include but not limited to:**
 | * Scales
* Skins
* Fins
* Frames/Skeleton
* Swim bladder
 |
| 1. Packaging tools, equipment and materials **may include but not limited to:**
 | * Weighing balance, polybags, cartons, gunny bags, ice packs, baskets, cool boxes, sealing tape, labels, pallets, wheelbarrow
 |

**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:

* Use of tools and equipment
* Weighing
* Fish handling
* Fish preservation
* Fish processing
* Packaging
* Record keeping
* Communication
* Basic first aid
* Numeracy

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of tools, equipment and PPEs
* Fish spoilage
* Fish handling, processing and preservation
* Marketing and market dynamics
* Workplace safety regulations
* Waste management regulations

**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. Cleaned fish to remove all slime and foreign materials
	2. Gutted fish to remove all visceral material
	3. Preserved fish using appropriate method
	4. Processed fish into various products and by-products
	5. Packaged and stored fish products in designated areas
	6. Marketed fish products
	7. Observed hygienic standards
	8. Disposed of waste from fish processing
 |
| 1. Resource Implications
 | The following resources must be provided:2.1 Workplace or assessment location2.2 PPEs2.3 Tools, materials and equipment2.4 Writing materials* 1. Calculator
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 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. |

# MANAGE FISHING GEAR

**UNIT CODE:** AGR/OS/FIS/CR/06/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage fishing gear. It involves designing fishing gear, constructing fishing gear, operating fishing gear and maintaining fishing gear.

**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. Design fishing gear
 | * 1. Type of fishing gear is determined based on the type of target catch.
	2. Fish behavior is determined as per the fish species and size.
	3. Depth of the water determined as per the fishing area.
	4. ***Measurements of the fishing gear*** determined as per the method of fishing
	5. Mesh size determined based on the size of the target fish.
 |
| 1. Construct fishing gear
 | * 1. ***Material for fishing gear*** is determined based on the type of fishing gear, place and target species.
	2. Material for fishing gear assembled based on the based on the selected material
	3. Fishing gear is made as per the design
	4. The fishing gear is tested as per SOPs
 |
| 1. Operate fishing gear
 | * 1. The fishing area is surveyed and determined as per the fishing method
	2. Fishing gear Set up as per the SOPs
	3. Fishing gear monitored based on fish population and duration of the catch
	4. Fishing gear is hauled based on the catch.
	5. Fish is harvested from the fishing gear SOPs
	6. The catch is landed and sorted based on size and species
 |
| 1. Maintain fishing gear
 | 1. The fishing gear is cleaned and dried as per the SOPs
2. The condition of the fishing gear is assessed based on SOPs
3. Materials and tools for repair are assembled based on the type of gear and nature of repair.
4. Fishing gear repair is carried out as per the SOPs.
5. Fishing gear is stored as per the SOPs
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Measurements of the fishing gear may include but not limited to:
 | * Ply
* Diameter
* TEX, RTEX
* Material type:
	+ PE
	+ PA
* Monofilament
* Braided
* Twisted
* Mesh size for mending purposes
* Mesh size for fisheries regulation purposes
 |
| 1. Material for fishing gear may include but not limited to:
 | * Gill netting:
* Monofilament
* Multi-monofilament
* Purse seine netting
* Knotted and knotless netting
* Braided twine
* Twisted twine
* Polyethylene (PE)
* Polyamide (nylon) (PA)
* Strengthening ropes
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Repairing or replacing all worn gear components, excluding damage to netting material
* Assembling and dismantling connecting devices
* Ensuring gear is deployed untwisted
* Using machinery to deploy and retrieve fishing gear
* Stowing fishing gear
* Sorting catch
* Reading sizes of connecting gear.
* Measuring length or diameter.

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Factors that make components effective or defective
* Order in which gear components are connected and disconnected
* Basic operating principle of the fishing gear
* Principles that contribute to
* Personal, seafood and vessel hygiene
* Environmental and resource protection
* Workplace safety
* Vessel stability

**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. Designed fishing gear
2. Constructed fishing gear
3. Operated fishing gear
4. Maintained fishing gear
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Fully operational vessel with fishing gear and catch suitable for sorting
	2. Enterprise procedures
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# CONDUCT FISHING OPERATIONS

**UNIT CODE:** AGR/OS/FIS/CR/07/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to set up a fishing gear, collecting fish from harvesting gear, transporting fish to the fish landing beaches under stringent hygienic conditions and unload and load fish and fish products from the fishing vessel

**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. Set up fishing gear
 | 1. ***PPEs*** are identified as per task requirements.
2. ***Tools, equipment*** and ***materials*** are gathered as per task requirements.
3. Fishing ground is identified as per the fishing method and target species.
4. Fishing gear is laid out as per the fish behavior and patterns of water current.
 |
| 1. Collect fish from harvesting gear
 | 1. Manner of fish collection in the fishing gear is determined based on the mode of entanglement
2. Harvested fish are removed from the gear with minimal or no physical injury as per SOPs
3. Fish is loaded into the vessel as per standard operating procedures.
4. Fish is sorted as per the size and quality requirements
 |
| 1. Transport fish to landing beaches
 | * 1. Harvested fish is stowed in ***cooling facilities*** in the fishing vessels as per standard operating procedures
	2. Ice is applied on to the harvested fish as per the standard operating procedures
	3. Fish is offloaded from the vessel into the fish Banda as per SOPs
 |
| 1. Unload and load fish and fish products
 | * 1. Load characteristics are identified and taken into account when determining appropriate loading and unloading

procedures* 1. Dangerous or hazardous goods are identified and handled in accordance with relevant regulations/permit requirements
	2. Load is packed/unpacked to make safe and effective use of available spaces
	3. Goods/cargo are loaded in accordance with relevant mass and loading regulations and workplace procedures
	4. Lifting aids and appliances are selected and used to aid

loading procedures in compliance with workplace procedures and safety legislation* 1. Unloading activities are conducted in a safe and efficient manner taking into account suitable locations, stowage, safe use of equipment and the balance of the remaining load
	2. Goods requiring special handling and/or documentation are identified and appropriate procedures followed
	3. Relocated material is restacked appropriate for the transport method, safe height, weight loading, size and crushability of the goods
	4. Load is secured and protected as per the SOPs
	5. Documentation is completed as per the SOPs
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. PPEs may include but not limited to:
 | * Hand gloves, warm clothing, safety goggles, life jackets, wading suits
 |
| 1. Tools, equipment materials may include but not limited to:
 | * Fishing nets, fishing boat, hand gloves, fishing gears, ice, perforators, cool boxes, basins, buckets, weighing scales, gum boots, dust coats,
 |
| 1. Cooling facilities may include but not limited to:
 | * Cool boxes, freezers, refrigerators,
 |

**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:

* Vessel navigation skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Adjusting gear components to improve performance
* Icing
* Numeracy skills
* Reading operating instructions for electronic detection
* Equipment.

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Post mortem changes in fish
* Fish harvesting methods
* Fish preservation methods
* Fish movement behavior,
* Water current movement patterns

**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 PPEs are as per task requirements.
2. Tools, equipment and materials are gathered as per task requirements
3. Set up fishing gear
4. Collected fish from harvesting gear
5. Transported fish to landing beaches
6. Unloaded and loaded fish and fish products
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Fully operational fishing boat with fishing gears
	2. Enterprise procedures
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
 |
| 1. Context of Assessment
 | Assessment could be conducted:1. On-the-job
2. Off-the–job
3. During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# MANAGE FISH AGGREGATING DEVICES (FADs)

**UNIT CODE:** AGR/OS/FIS/CR/08/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage fish aggregating devices it involves designing Fish aggregating devices , setting up Fish aggregating devices and maintaining Fish aggregating devices.

**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. Design Fish aggregating devices
 | 1. Type of ***FAD*** is determined based on the target species
2. Site selection
3. Model of the FAD is determined as per the habitat of the target species.
4. Materials, tools and equipment identified and gathered as per the model of the FAD
5. The FAD is assembled as per the model.
 |
| 1. Set up Fish aggregating devices
 | 1. Means of transport identified based on weight of the FAD and distance to the site
2. Substrate is determined as per the anchoring needs
3. The number and distance between FADs is determined as per the scale
4. The FAD is fixed as per the substrate and wave direction
 |
| 1. Maintain Fish aggregating devices
 | 1. FADs are monitored as per the purpose
2. FADs are repaired as per the physical condition
3. FADs are treated as per the level of colonization by harmful organisms.
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. FAD
 | * Fish aggregating devices
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Meaning of fish aggregating devices(FADs), target species
* Types of FADs
* Site selection
* Models of the FADs
* Materials, tools and equipment for construction of FADs
* Construction procedures for FADs
* Impacts of FADs
* Guidelines on setting up FADs
* Transportation of FADs
* Types of substrates
* Factors to consider when setting up FADs
* Procedures for fixing FADs

**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. Designed Fish aggregating devices
2. Set up Fish aggregating devices
3. Maintained Fish aggregating devices
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Workshop
	2. Fishing ground
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written tests
	2. Third party reports
	3. Oral questioning
	4. Interview
	5. Observation
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |

# MANAGE FISH HEALTH

**UNIT CODE:** AGR/OS/FIS/CR/09/6/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage fish health. It involves determining water quality, diagnosing fish parasites and diseases and managing fish parasites and diseases.

**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. Determine water quality
 | 1. ***Physical-chemical parameters*** of water are assessed as per the ecological requirements for fish.
2. Physical-chemical parameters are documented as per the SOPs
3. Physical-chemical parameters are monitored as per the SOPs
4. Physical-chemical parameters are analyzed as per the SOPs
 |
| 1. Diagnose fish parasites and diseases
 | 1. Health and condition of the catch assessed as per the SOPs
2. The infected catch is sampled as SOPs
3. The infected catch is observed and/or cultured as per SOPs
4. Fish parasites and diseases are identified and documented as per observations made.
 |
| 1. Manage fish parasites and diseases
 | 1. Level of infestation is determined and documented based on SOPs
2. Fish parasites and diseases management measures are identified as per level of infestation.
3. Action taken against the spread of fish parasites and diseases as per the identified parasites and diseases management measures
 |

**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.

|  |  |
| --- | --- |
| Variables | Range  |
| 1. Physical-chemical parameters may include but not limited to:
 | * Dissolved oxygen
* pH
* Temperature
* Nitrates/nitrites/ammonia
* Salinity
* Total Dissolved Solutes
* Conductivity
 |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Physical-chemical parameters of water
* Ecological requirements for fish.
* Analysis and documentation of Physical-chemical parameters
* Monitoring physical-chemical parameters
* Types of fish parasites
* Types of fish diseases
* Signs and symptoms of fish parasites and diseases
* Diagnostic techniques
* Spread of fish parasites and diseases
* Effects of fish parasites and diseases
* Magnitude of infestation
* Fish parasites and diseases management measures
* Prevention, control and treatment of fish parasites and diseases

**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. Determined water quality
2. Diagnosed fish parasites and diseases
3. Managed fish parasites and diseases
 |
| 1. Resource implications
 | The following resources must be provided:* 1. Laboratory
	2. Fish
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through:1. Observation
2. Oral questioning
3. Written test
4. Portfolio of Evidence
5. Interview
6. Third party report
 |
| 1. Context of Assessment
 | Assessment could be conducted:* On-the-job
* Off-the–job
* During industrial attachment
 |
| 1. Guidance information for assessment
 | Holistic assessment with related units in the sector |