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**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**DAIRY PLANT MANAGER**

**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 Kenya’s development blue print and sustainable development goals.

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

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Dairy Plant Management Level 6. These Occupational Standards will also be the bases for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for theDairy sector’s growth and sustainable development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

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

The Technical and Vocational Education and Training Act No. 29 of 2013 and the sessional parer No, 14 of 20212 on Reforming Education and Training in Kenya, emphasized the need toreform curriculum development, assessment and certification. This called for shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Dairy Sector Skills Advisory Committee (SSAC), German International Cooperation and Ministry of Agriculture, Livestock and Fisheries have developed these Occupational Standards for a Dairy Plant Manager. TVET CDACC in conjunction with Micro Enterprises Support Programme Trust (MESPT) have reviewed this Occupational Standards and incorporated Food Safety.

 These occupational standards will be the bases for development of competency-based curriculum for Dairy Plant Management Level 6. These Standards will also be the basis for assessment of an individual for competence certification.

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

I am grateful to the Council Members, Council Secretariat, Dairy SSAC, Food Safety SSAC, expert workers and all those who participated in the development and review of these occupational standards.

**CHAIRPERSON,**

**TVET CDACC**

# ACKNOWLEDGMENT

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

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

My gratitude also goes to NEPAD Planning and Coordinating Agency (NPCA) of the Africa Union Commission and German Ministry of Economic Cooperation and Development (BMZ) through its implementing agency German International Cooperation (GIZ) GmbH which enabled the development of these Standards through the CAADP ATVET project.

I also appreciate the office of the National Coordinator of GIZ CAADP ATVET Project which was instrumental in the cooperation between the project team, Ministry of Agriculture, Livestock and Fisheries (MoALF) and Ministry of Education.

Much gratitude goes to Micro Enterprises Support Program Trust (MESPT) who initiated the review process and the incorporation of Food Safety in the Curriculum. I acknowledge the Danish International Development Agency (DANIDA) and the European Union (EU) who sponsored the review process.

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

**CHAIRPERSON**

**DAIRY SECTOR SKILLS ADVISORY COMMITTEE**

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# ACRONYMS AND ABBREVIATION

ATVET Agricultural Technical and Vocational Education and Training

BC Basic Competency

CAADP Comprehensive Africa Agricultural Development Programme

CDACC Curriculum Development, Assessment and Certification Council

CR Core Competency

DA Dairy Sector

DANIDA Danish International Development Agency

DTI Dairy Training Institute

FAO Food and Agriculture Organization

GIZ German International Cooperation

GMP Good Manufacturing Practices

ICT Information Communication Technology

IFAD International Fund Agriculture Development

MESPT Micro Enterprises Support Programme Trust

MoALF Ministry of Agriculture, Livestock and Fisheries

NEMA National Environmental Management Authority

OS Occupational Standards

OSHA Occupation Safety and Health Act

OSHS Occupation Safety and Health Standards

PM Plant Manager

PPE Personal Protective Equipment

SDCP Smallholder Dairy Commercialization Programme

SSAC Sector Skills Advisory Committee

TVET Technical and Vocational Education and Training

UHT Ultra Heat Treated

USAID United States Agency for International Development

# KEY TO UNIT CODE

 **DA/OS/PM/BC/01/6/B**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

# OVERVIEW

Dairy Plant Management Qualification Level 6 consists of competencies that an individual must achieve to manage a dairy plant. It entails procuring raw milk, chilling raw milk, processing fluid milk, fermented milk products, cheese, fat-based milk products, concentrated milk products, controlling quality of dairy products and managing the dairy enterprise.

This qualification consists of the following basic and core competencies:

**BASIC COMPETENCIES**

1. Demonstrate communication skills
2. Demonstrate numeracy skills
3. Demonstrate digital literacy
4. Demonstrate entrepreneurial skills
5. Demonstrate employability skills
6. Demonstrate environmental literacy
7. Demonstrate occupational safety and health practices

**CORE COMPETENCIES**

1. Procure raw milk
2. Chill raw milk
3. Process fluid milk
4. Process fermented milk products
5. Produce cheese
6. Process fat-based milk products
7. Process concentrated milk products
8. Control quality of dairy products
9. Manage dairy plant business

# BASIC UNITS OF COMPETENCY

## DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** DA/OS/PM/BC/01/6/B

**UNIT DESCRIPTION**

This unit covers the competencies required in meeting communication needs of clients and colleagues; developing, establishing, maintaining communication pathways and strategies. It also covers competencies for conducting interview, facilitating group discussion and representing the organization in various forums.

**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
 | 1.1 Specific communication needs of clients and colleagues are identified and met1.2 Different approaches are used to meet communication needs of clients and colleagues1.3 Conflict is addressed promptly and in a timely way and in a manner, which does not compromise the standing of the organization |
| 1. Develop communication strategies
 | * 1. Strategies for effective internal and external dissemination of information are developed to meet the organization’s requirements
	2. Special communication needs are considered in developing strategies to avoid discrimination in the workplace
	3. Communication ***strategies*** are analyzed, evaluated and revised where necessary to make sure they are effective
 |
| 1. Establish and maintain communication pathways
 | * 1. Pathways of communication are established to meet requirements of organization and workforce
	2. Pathways are maintained and reviewed to ensure personnel are informed of relevant information
 |
| 1. Promote use of communication strategies
 | * 1. Information is provided to all areas of the organization to facilitate implementation of the strategy
	2. Effective communication techniques are articulated and modelled to the workforce
	3. Personnel are given guidance about adapting communication strategies to suit a range of contexts
 |
| 1. Conduct interview
 | 1. A range of appropriate communication strategies are employed in ***interview situations***
2. Records of interviews are made and maintained in accordance with organizational procedures
3. Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated
 |
| 1. Facilitate group discussion
 | * 1. Mechanisms which enhance ***effective group interaction*** is defined and implemented
	2. Strategies which encourage all group members to participate are used routinely
	3. Objectives and agenda for meetings and discussions are routinely set and followed
	4. Relevant information is provided to group to facilitate outcomes
	5. Evaluation of group communication strategies is undertaken to promote participation of all parties
	6. Specific communication needs of individuals are identified and addressed
 |
| 1. Represent the organization
 | 7.1 When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization 7.2 Presentation is clear and sequential and delivered within a predetermined time 7.3 Appropriate media is utilized to enhance presentation 7.4 Differences in views are respected7.5 Written communication is consistent with organizational standards 7.6 Inquiries are responded in a manner consistent with organizational standard |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| * Communication strategies
* include but not limited to:
 | * Language switch
* Comprehension check
* Repetition
* Asking confirmation
* Paraphrase
* Clarification request
* Translation
* Restructuring
* Approximation
* Generalization
 |
| * Effective group interaction includes but not limited to:
 | * Identifying and evaluating what is occurring within an interaction in a 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
 |
| * Situations include but not limited to:
 | * Establishing rapport
* Eliciting facts and information
* Facilitating resolution of issues
* Developing action plans
* Diffusing potentially difficult situations
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups and different styles of group leadership
* Communication skills relevant to client groups
* Flexibility in communication
* Communication skills relevant to client groups
* 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/Demonstration with Oral Questioning
2. Written Examination
 |
| 1. Context of Assessment
 | Competency may be assessed individually in the actual workplace or through accredited institution |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## DEMONSTRATE NUMERACY SKILLS

**UNIT CODE:** DA/OS/PM/BC/02/6/B

**UNIT DESCRIPTION**

This unit describes the competencies required by a worker in order to apply a wide range of mathematical calculations for work; apply ratios, rates and proportions to solve problems; estimate, measure and calculate measurement for work; Use detailed maps to plan travel routes for work; Use geometry to draw and construct 2D and 3D shapes for work; Collect, organize and interpret statistical data; Use routine formula and algebraic expressions for work and use 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 | 1.1 Mathematical information embedded in a range of workplace tasks and texts is extracted1.2 Mathematical information is interpreted and comprehended1.3 A range of mathematical and problem solving processes are select and used1.4 Different forms of fractions, decimals and percentages are flexibly used1.5 Calculation performed with positive and negative numbers1.6 Numbers are expressed as powers and roots and are used in calculations1.7 Calculations done using routine formulas1.8 Estimation and assessment processes are used to check outcome1.9 Mathematical language is used to discuss and explain the processes, results and implications of the task |
| 2. Use and apply ratios, rates and proportions for work | 2.1 Information regarding ratios, rates and proportions extracted from a range of workplace tasks and texts2.2 Mathematical information related to ratios, rate and proportions is analysed2.3 Problem solving processes are used to undertake the task2.4 Equivalent ratios and rates are simplified2.5 Quantities are calculated using ratios, rates and proportions2.6 Graphs, charts or tables are constructed to represent ratios, rates and proportions2.6 The outcomes reviewed and checked2.7 Information is record using mathematical language and symbols |
| 3. Estimate, measure and calculate measurement for work | 1. Measurement information embedded in workplace texts and tasks are extracted and interpreted
2. Appropriate workplace measuring equipment are identified and selected
3. Accurate measurements are estimate and made
4. The area of 2D shapes including compound shapes are calculated
5. The volume of 3D shapes is calculated using relevant formulas
6. Sides of right angled triangles are calculated using Pythagoras’ theorem
7. conversions are perform between units of measurement
8. Problem solving processes are used to undertake the task
9. The measurement outcomes are reviewed and checked
10. Information is recorded using mathematical language and symbols appropriate for the task
 |
| 4. Use detailed maps to plan travel routes for work | 4.1 Different types of maps are identified and interpreted4.2 Key features of maps are identified4.3 Scales are identified and interpreted4.4 Scales are applied to calculate actual distances4.5 Positions or locations are determined using directional information4.6 Routes are planned by determining directions and calculating distances, speeds and times4.7 Information is gathered and identified and relevant factors related to planning a route checked4.8 Relevant equipment is select and checked for accuracy and operational effectiveness4.9 Task is planned and recorded using specialized mathematical language and symbols appropriate for the task |
| 5. Use geometry to draw 2D shapes and construct 3D shapes for work | 5.1 A range of 2D shapes and 3D shapes and their uses in work contexts is identified5.2 Features of 2D and 3D shapes are named and described5.3 Types of angles in 2D and 3D shapes are identified5.4 Angles are drawn, estimated and measured using geometric instruments5.5 Angle properties of 2D shapes are named and identified5.6 Angle properties are used to evaluate unknown angles in shapes5.7 Properties of perpendicular and parallel lines are applied to shapes5.8 Understanding and use of symmetry is demonstrated5.9 Understanding and use of similarity is demonstrated5.10 The workplace tasks and mathematical processes required are identified5.11 2D shapes is drawn for work5.12 3D shapes is constructed for work5.13 The outcomes are reviewed and checked5.14 Specialized mathematical language and symbols appropriate for the task are used |
| 6. Collect, organize, and interpret statistical data for work | 6.1 Workplace issue requiring investigation are identified6.2 Audience / population / sample unit is determined6.3 Data to be collected is identified6.4 Data collection method is selected6.5 Appropriate statistical data is collected and organized6.6 Data is illustrated in appropriate formats6.7 The effectiveness of different types of graphs are compared6.8 The summary statistics for collected data is calculated6.9 The results / findings are interpreted6.10 Data is checked to ensure that it meets the expected results and content6.11 Information from the results including tables, graphs and summary statistics is extracted and interpreted6.12 Mathematical language and symbols are used to report results of investigation |
| 7. Use routine formula and algebraic expressions for work | 7.1 Understanding of informal and symbolic notation, representation and conventions of algebraic expressions is demonstrated7.2 Simple algebraic expressions and equations are developed7.3 Operate on algebraic expressions7.4 Algebraic expressions are simplified 7.5 Substitution into simple routine equations is done7.6 Routine formulas used for work tasks are identified and comprehended7.7 Routine formulas are evaluate by substitution7.8 Routine formulas transposed7.9 Appropriate formulas are identified and used for work related tasks7.10Outcomes are checked and result of calculation used |
| 8. Use common functions of a scientific calculator for work | 8.1 Required numerical information to perform tasks is located8.2 The order of operations and function keys necessary to solve mathematical calculation are determined8.3 Function keys on a scientific calculator are identified and used8.4 Estimations are referred to check reasonableness of problem solving process8.5 Appropriate mathematical language, symbols and conventions are used to report results |

**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** |
| * Geometry
 | May include but not limited to:* Scale drawing
* Triangles
* Simple solid
* Round
* Square
* Rectangular
* Triangle
* Sphere
* Cylinder
* Cube
* Polygons
* Cuboids
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Applying Fundamental operations (addition, subtraction, division, multiplication)
* Using calculator
* Using different measuring tools

**Required knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1.      Critical aspects of Competency | Assessment requires evidence that the candidate:1. Applied a wide range of mathematical calculations for work
2. Used and applied ratios, rates and proportions for work
3. Estimated, measured and calculated measurement for work
4. Used detailed maps to plan travel routes for work
5. Used geometry to draw 2D shapes and construct 3D shapes for work
6. Collected, organized, and interpreted statistical data for work
7. Used routine formula and algebraic expressions for work
8. Used common functions of a scientific calculator for work
 |
| 2.      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
 |
| 3.      Methods of Assessment | Competency in this unit may be assessed through:1. Direct Observation/Demonstration with Oral Questioning
2. Written Examination
 |
| 4.      Context of Assessment | Competency may be assessed individually in the actual workplace or through accredited institution |
| 5.      Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |
|  |  |

## DEMONSTRATE DIGITAL LITERACY

**UNIT CODE:** DA/OS/PM/BC/03/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**These are assessable statements which specify the required level of performance for each of the elements.***Bold and italicized terms are elaborated in the Range*** |
| 1. Identify appropriate computer software and hardware
 | * 1. Concepts of ICT are determined in accordance with computer equipment
	2. Classifications of computers are determined in accordance with manufacturers specification
	3. ***Appropriate computer software*** is identified according to manufacturer’s specification
	4. ***Appropriate computer hardware*** is identified according to manufacturer’s specification
	5. Functions and commands 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.
	4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT
 |
| 1. Apply computer software in solving tasks
 | * 1. ***Word processing concepts*** are applied in resolving workplace tasks, report writing and documentation
	2. ***Word processing utilities*** are applied in accordance with workplace procedures
	3. Worksheet layout is prepared in accordance with work procedures
	4. Worksheet is 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** |
| * Appropriate computer software may include but not limited to:
 | * A collection of instructions or computer tools that enable the user to interact with a *computer*, its hardware, or perform tasks.
 |
| * Appropriate computer hardware may include but not limited to:
 | Collection of physical parts of a computer system such as;* Computer case, monitor, keyboard, and mouse
* All the parts inside the computer case, such as the hard disk drive, motherboard and video card
 |
| * Data security and privacy may include but not limited to:
 | * Confidentiality of data
* Cloud computing
* Integrity -but-curious data surfing
 |
| * Security and control measures may include but not limited to:
 | * Counter measures against cyber terrorism
* Risk reduction
* Cyber threat issues
* Risk management
* Pass-wording
 |
| * Security threats may include but not limited to:
 | * Cyber terrorism
* Hacking
 |
| * Word processing concepts may include but not limited to:
 | * Using a special program to create, edit and print documents
 |
| * Network configuration may include but not limited to:
 | * Organizing and maintaining information on the components of a computer network
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Software concept
* Functions of computer software and hardware
* Data security and privacy
* Computer security threats and control measures
* Technology underlying cyber-attacks and networks
* Cyber terrorism
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Word processing;
* Functions and concepts of word processing.
* Documents and tables creation and manipulations
* Mail merging
* Word processing utilities
* Spread sheets;
* Meaning, formulae, function and charts, uses and layout
* Data formulation, manipulation and application to cells
* Database;
* Database design, data manipulation, sorting, indexing, storage retrieval and security
* Desktop publishing;
* Designing and developing desktop publishing tools
* Manipulation of desktop publishing tools
* Enhancement of typeset work and printing documents
* Presentation Packages;
* Types of presentation Packages
* Creating, formulating, running, editing, printing and presenting slides and handouts
* Networking and Internet;
* Computer networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and integrate emerging trends and issues in ICT
* Challenges posed by emerging trends and issues

**EVIDENCE** **GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:* 1. Identified and controlled security threats
	2. Detected and protected computer crimes
	3. Applied word processing in office tasks
	4. Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures
	5. Opened electronic mail for office communication as per workplace procedure
	6. Installed internet and World Wide Web for office tasks in accordance with office procedures
	7. Integrated emerging issues in computer ICT applications
	8. Applied laws governing protection of ICT
 |
| 1. Resource Implications
 | * 1. Tablets
	2. Laptops and
	3. Desktop PCs
	4. Desktop computer
	5. Lap top
	6. Calculator
	7. Internet
	8. Smart phone
	9. Operations Manuals
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Written Test
	2. Demonstration
	3. Practical assignment
	4. Interview/Oral Questioning
	5. Demonstration
 |
| 1. Context of Assessment
 | Competency may be assessed in an off and on the job setting |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## DEMONSTRATE UNDERSTANDING OF ENTREPRENEURSHIP

**UNIT CODE :** DA/OS/PM/BC/04/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements.***Bold and italicized terms are elaborated in the Range*** |
| --- | --- |
| 1. 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** include but not limited to: |
| --- | --- |
| * Types of entrepreneurs but not limited to:
 | * Innovators
* Imitators
* Craft
* Opportunistic
* Speculators
 |
| * Principles of Entrepreneurship but not limited to:
 | * Visionary
* Solution provider
* Accountability
* Growth and marketing
* Resilient
* Tenacious
 |
| * Characteristics of Entrepreneurs include but not limited to:
 | * Creative
* Innovative
* Planner
* Risk taker
* Networker
* Confident
* Flexible
* Persistent
* Patient
* Independent
* Future oriented
* Goal oriented
 |
| * Requirements for entry into self-employment
 | * Technical skills
* Management skills
* Entrepreneurial skills
* Resources
* Infrastructure
 |
| * Internal motivation
 | * Interest
* Passion
* Freedom
* Prestige
 |
| * Business environment
 | * External
* Internal
* Intermediate
 |
| * Forms of businesses
 | * Sole proprietorship
* Partnership
* Limited companies
* Cooperatives
 |
| * Governing policies
 | * Increasing scope for finance
* Promoting cooperation between entrepreneurs and private sector
* Reducing regulatory burden on entrepreneurs
* Developing IT tools for entrepreneurs
 |
| * External motivation
 | * Rewards
* Punishment
* Enabling environment
* Government policies
 |
| * Entrepreneurial orientation
 | * Passion
* Interest
* Hobbies
* Skills
 |
| * Innovative business strategies
 | * New products
* New methods of production
* New markets
* New sources of supplies
* Change in industrialization
 |
| * Communication principles
 | * Feed back
* Attention
* Clarity
* Timeliness
* Adequacy
* Consistency
* Informality
 |
| * Motivational theories include but not limited to:
 | * Marslows theory
* McClelland theory
* Fredrick Tylors theory
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Entrepreneurial competencies
* Decision making
* Business communication
* Change management
* Coping with competition
* Risk taking
* 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
* Concepts of change management
* Relevant developments in other industries
* Regional/ County business expansion strategies
* Innovation in business

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:1. Distinguished entrepreneurs and business persons correctly
2. Identified ways of becoming an entrepreneur appropriately
3. Explored factors affecting entrepreneurship development appropriately
4. Analysed importance of self-employment accurately
5. Identified requirements for entry into self-employment correctly
6. Identified sources of business ideas correctly
7. GeneratedBusiness ideas and opportunities correctly
8. Analysed business life cycle accurately
9. Identified legal aspects of business correctly
10. Assessed product demand accurately
11. Determined Internal and external motivation factors appropriately
12. Carried out communications effectively
13. Identified sources of business finance correctly
14. Determined Governing policy on small scale enterprise appropriately
15. Explored problems of starting and operating SSEs effectively
16. Developed Marketing, Organizational/Management, Production/Operation and Financial plans correctly
17. Prepared executive summary correctly
18. Determined business innovative strategies appropriately
19. Presented business plan effectively
 |
| 1. Resource Implications
 | The following resources should be provided:1. Check list
2. Research tools (Questionnaire, interview guide, observation schedule)
3. Materials, tools, equipment and machines relevant
 |
| 1. Methods of Assessment
 | 1. Written tests
2. Observation
3. Oral questions
4. Third party report
5. Interviews
6. Case problems
7. Portfolio
 |
| 1. Context of Assessment
 | 1. Competency may be assessed in workplace or in a simulated workplace setting
2. Assessment shall be observed while tasks are being undertaken whether individually or in-group
 |
| 5. 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:** DA/OS/PM/BC/05/6/B

**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. Emotions are managed as per workplace requirements
3. Individual performance is evaluated and monitored according to the agreed targets.
4. Assertiveness is developed and maintained based on the requirements of the job.
5. Accountability and responsibility for own actions are demonstrated.
6. Self-esteem and a positive self-image are developed and maintained.
7. Time management, attendance and punctuality are observed as per the organization policy.
8. Goals are managed as per the organization’s objective
9. Self-strengths and weaknesses are identified as per ***personal objectives***
10. Critics are managed as per personal objectives
 |
| 1. Demonstrate interpersonal communication
 | 1. Listening and understanding is demonstrated as per communication policy
2. Writing to the needs of the audience is demonstrated as per communication policy
3. Speaking, reading and writing is demonstrated as per communication policy
4. Negotiation skills are demonstrated as per communication policy
5. Empathizing is demonstrated as per the communication policy
6. Numeracy is applied as per the communication policy
7. Internal and external customers’ needs are identified and interpreted as per the communication policy
8. Persuasion is demonstrated as per the communication policy
9. Communication networks are established as per the SOPs
10. Information is shared as per communication structure
 |
| 1. Demonstrate critical safe work habits
 | * 1. Stress is managed in accordance with workplace procedures.
	2. Punctuality and time consciousness is demonstrated in line with workplace policy.
	3. Personal objectives are integrated with organization goals based on organization’s strategic plan.
	4. ***Resources*** are utilized in accordance with workplace policy.
	5. Work priorities are set in accordance to workplace procedures.
	6. Leisure time is recognized in line with organization policy.
	7. Abstinence from ***drug and substance abuse*** is observed as per workplace policy.
	8. Awareness of HIV and AIDS is demonstrated in line with workplace requirements.
	9. Safety consciousness is demonstrated in the workplace based on organization safety policy.
	10. ***Emerging issues*** are dealt with in accordance with organization policy.
 |
| 1. Lead a workplace team
 | 1. Performance expectations for the ***team*** are set
2. Duties and responsibilities are assigned in accordance with the organization policy.
3. Team parameters and ***relationships*** are identified according to set rules and regulations.
4. ***Forms of communication*** in a team are established according to office policy.
5. Communication is carried out as per workplace place policy and requirements of the job.
6. Team performance is supervised
7. ***Feedback*** on performance is collected and analyzed based on established team learning process
8. Conflicts are resolved between team members in line with organization rules and regulations.
9. ***Gender mainstreaming*** is undertaken in accordance with set regulations.
10. Human rights are adhered to in accordance with existing protocol.
11. Healthy relationships are developed and maintained for harmonious co-existence in line with workplace.
 |
| 1. Plan and organize work
 | 1. Task requirements are identified as per the workplace objectives
2. Task is interpreted in accordance with safety (OHS ), environmental requirements and quality requirements
3. Work activity is organized with other involved personnel as per the SOPs
4. Resources are mobilized, allocated and utilized to meet project goals and deliverables.
5. Work activities are monitored and evaluated in line with organization procedures.
6. Job planning is documented in accordance with workplace requirements.
7. Planning and organizing of work activities is reviewed as per the workplace requirements
8. Time is managed achieve workplace set goals and objectives.
 |
| 1. Maintain professional growth and development
 | * 1. Personal training needs are identified and assessed in line with the requirements of the job.
	2. ***Training and career opportunities*** are identified and availed based on job requirements.
	3. Resources for training are mobilized and allocated based organizations skills needs.
	4. Licensees and certifications relevant to job and career are obtained and renewed.
	5. ***Personal growth*** is pursued towards improving the qualifications set for the profession.
	6. Work priorities and commitments are managed based on requirement of the job and workplace policy.
	7. Recognitions are sought as proof of career advancement in line with professional requirements.
 |
| 1. Demonstrate workplace learning
 | * 1. Own learning is managed as per workplace policy.
	2. Learning opportunities are sought and allocated based on job requirement and in line with organization policy.
	3. Contribution to the learning community at the workplace is carried out.
	4. ***Range of media for learning*** are established as per the training need
	5. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job
	6. Enthusiasm for ongoing learning is demonstrated
	7. Time and effort is invested in learning new skills-based job requirements
	8. Willingness to learn in different context is demonstrated based on available learning opportunities arising in the workplace.
	9. Awareness of Occupational Health and Safety procedures are demonstrated in use of technology in the workplace.
	10. Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy.
	11. New systems are developed and maintained in accordance with the requirements of the job.
	12. Opportunities that are not obvious are identified and exploited in line with organization objectives.
	13. Opportunities for performance improvement are identified proactively in area of work.
	14. Awareness of personal role in workplace ***innovation*** is demonstrated.
 |
| 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.
	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 workplace ethics
 | * 1. Policies and guidelines are observed as per the workplace requirements
	2. Self-worth and profession is exercised in line with personal goals and organizational policies
	3. Code of conduct is observed as per the workplace requirements
	4. Personal and professional integrity is demonstrated as per the personal goals
	5. Commitment to jurisdictional laws is demonstrated as per the workplace requirements
 |

**RANGE**

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

|  |  |
| --- | --- |
| Variable | **Range** |
| * Drug and substance abuse include but not limited to:
 | Commonly abused* Alcohol
* Tobacco
* Miraa
* Over-the-counter drugs
* Cocaine
* Bhang
* Glue
 |
| * Feedback includes but not limited to:
 | * Verbal
* Written
* Informal
* Formal
 |
| * Relationships includes but not limited to:
 | * Man/Woman
* Trainer/trainee
* Employee/employer
* Client/service provider
* Husband/wife
* Boy/girl
* Parent/child
* Sibling relationships
 |
| * Forms of communication include but not limited to:
 | * Written
* Visual
* Verbal
* Non verbal
* Formal and informal
 |
| * Team includes but not limited to:
 | * Small work group
* Staff in a section/department
* Inter-agency group
 |
| * Personal growth includes 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
 |

 |
| * Personal objectives include but not limited to:
 | * Long term
* Short term
* Broad
* Specific
 |
| * Trainings and career opportunities includes but not limited to
 | * Participation in training programs
* Technical
* Supervisory
* Managerial
* Continuing Education
* Serving as Resource Persons in conferences and workshops
 |
| * Resource include but not limited to:
 | * Human
* Financial
* Technology
* Hardware
* Software
 |
| * Innovation include but not limited to:
 | * New ideas
* Original ideas
* Different ideas
* Methods/procedures
* Processes
* New tools
 |
| * Emerging issues include but not limited to:
 | * Terrorism
* Social media
* National cohesion
* Open offices
 |
| * Range of media for learning include but not limited to:
 | * Mentoring
* peer support and networking
* IT and courses
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency
 | Assessment requires evidence that the candidate:* 1. Conducted self-management
	2. Demonstrated 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 ethical performance
 |
| 1. Resource Implications
 |

|  |
| --- |
| The following resources should be provided:  |

* 1. Case studies/scenarios
 |
| 1. Methods of Assessment
 | Competency in this unit may be assessed through: 1. Oral Interview
2. Observation
3. Third Party Reports
4. Written
 |
| 1. Context of Assessment
 | * 1. Competency may be assessed in workplace or in a simulated workplace setting
	2. Assessment shall be observed while tasks are being undertaken whether individually or in-group
 |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE:** DA/OS/PM/BC/06/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to follow procedures for environmental hazard control, follow procedures for environmental pollution control, comply with workplace sustainable resource use, evaluate current practices in relation to resource usage, develop and adhere to environmental protection principles/strategies/guidelines, analyze resource use, develop resource conservation plans and implement selected 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
 | 1.1 ***Storage methods*** for environmentally hazardous materials are strictly followed according to environmental regulations and OSHS. 1.2 ***Disposal methods*** of hazardous wastes are followed at all times according to environmental regulations and OSHS.1.3 ***PPE*** is used according to OSHS.  |
| 1. Control environmental Pollution control
 | * 1. Environmental pollution ***control measures*** are compiled following standard protocol.
	2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999
	3. Methods for minimizing ***noise pollution*** complied following environmental regulations.
 |
| 1. Demonstrate sustainable resource use
 | * 1. Methods for minimizing wastage are complied with.
	2. Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle)
	3. Methods for economizing or reducing resource consumption are practiced.
 |
| 1. Evaluate current practices in relation to resource usage
 | * 1. Information on resource efficiency systems and procedures are collected and provided to the work group where appropriate.
	2. Current resource usage is measured and recorded by members of the work group.
	3. Current purchasing strategies are analyzed and recorded according to industry procedures.
	4. Current work processes to access information and data is analyzed following enterprise protocol.
 |
| 1. Identify Environmental legislations/conventions for environmental concerns
 | 5.1 Environmental legislations/conventions and local ordinances are identified according to the different environmental aspects/impact5.2 Industrial standard/environmental practices are described according to the different environmental concerns |
| 1. Implement specific environmental programs
 | 6.1 Programs/Bctivities are identified according to organizations policies and guidelines.6.2 Individual roles/responsibilities are determined and performed based on the activities identified.6.3 Problems/constraints encountered are resolved in accordance with organizations’ policies and guidelines6.4 Stakeholders are consulted based on company guidelines |
| 1. Monitor activities on Environmental protection/Programs
 | 7.1 Activities are periodically monitored and Evaluated according to the objectives of the environmental program7.2 Feedback from stakeholders are gathered and considered in Proposing enhancements to the program based on consultations7.3 Data gathered are analyzed based on Evaluation requirements7.4 Recommendations are submitted based on the findings7.5 Management support systems are set/established to sustain and enhance the program7.6 Environmental incidents are monitored and reported to concerned/proper authorities |
| 1. Analyze resource use
 | 8.1. All resource consuming processes are Identified8.2. Quantity and nature of Resource consumed is determined8.3. Resource flow is analyzed through different parts of the process.8.4. Wastes are classified for possible source of resources. |
| 1. Develop resource Conservation plans
 | 9.1. Efficiency of use/conversion of resources is determined following 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** |
| * PPE May include but are not limited to
 | * Mask
* Gloves
* Goggles
* Safety hat
* Overall
* Hearing protector
 |
| * Environmental pollution control measures may include but are not limited to:
 | * Methods for minimizing or stopping spread and ingestion of airborne particles
* Methods for minimizing or stopping spread and ingestion of gases and fumes
* Methods for minimizing or stopping spread and ingestion of liquid wastes
 |
| * Wastes may include but are not limited to:
 | * Unnecessary waste
* Necessary waste
 |
| * Waste management Procedures may include but are not limited to:
 | * Sorting
* Storing of items
* Recycling of items
* Disposal of items
 |
| * Resources may include but are not limited to:
 | * Electric
* Water
* Fuel
* Telecommunications
* Supplies
* Materials
 |
| * Workplace environmental hazards may include but are not limited to:
 | * Biological hazards
* Chemical and dust hazards
* Physical hazards
 |
| * Organizational systems and procedures may include but are not limited to:
 | * Supply chain, procurement and purchasing
* Quality assurance
* Making recommendations and seeking approvals
 |
| * Legislations/Conventions may include but are not limited to:
 | * EMCA 1999
* Montreal Protocol
* Kyoto Protocol
 |
| * Environmental aspects/impacts may include but are not limited to:
 | * Air pollution
* Water pollution
* Noise pollution
* Solid waste
* Flood control
* Deforestation/Denudation
* Radiation/Nuclear /Radio Frequency/ Microwaves
* Situation
* Soil erosion (e.g. Quarrying, Mining, etc.)
* Coral reef/marine life protection
 |
| * Industrial standards / Environmental practices may include but are not limited to:
 | * ISO standards
* Company environmental management systems (EMS)
 |
| * Periodic may include but are not limited to:
 | * Hourly
* Daily
* Weekly
* Monthly
* Quarterly
* Yearly
 |
| * Programs/Bctivities may include but are not limited to:
 | * Waste disposal (on-site and off-site)
* Repair and maintenance of equipment
* Treatment and disposal operations
* Clean-up activities
* Laboratory and analytical test
* Monitoring and evaluation
* Environmental advocacy programs
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Following storage methods of environmentally hazardous materials
* Following disposal methods of hazardous wastes
* Using PPE
* Practicing OSHS
* Complying environmental pollution control
* Observing solid waste management
* Complying methods of minimizing noise Pollution
* Complying methods of minimizing wastage
* Employing waste management procedures
* Economizing resource consumption
* Listing of resources used
* Measuring current usage of resources
* Identifying and reporting workplace environmental hazards
* Conveying all environmental issues
* Following environmental regulations
* Identifying environmental regulations
* Assessing procedures for assessing compliance
* Collecting information on environmental and resource efficiency systems and procedures, and Providing information to the work group
* Measuring and recording current resource usage
* Analysing and recording current purchasing strategies.
* Analysing current work processes to access information and data and Assisting identifying areas for improvement
* Analysing resource flow
* Determining efficiency of use/conversion of resources
* Determining causes of low efficiency of use
* Developing plans for increasing the efficiency of resource use
* Checking resource use plans
* Complying to regulations/licensing requirements
* Determining benefit/cost of plans
* Ranking proposals based on benefit/cost compared to limited resources
* Checking proposals meet regulatory requirements
* Monitoring implementation
* Making adjustments to plan and implementation
* checking new resource usage

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Storage methods of environmentally hazardous materials
* Disposal methods of hazardous wastes
* Usage of PPE Environmental regulations
* OSHS
* Types of pollution
* Environmental pollution control measures
* Different solid wastes
* Solid waste management
* Different noise pollution
* Methods of minimizing noise pollution
* Methods of minimizing wstage
* Waste management procedures
* Economizing of resource consumption
* Principle of 3Rs
* Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Types of workplace environmental hazards
* Environmental regulations
* Environmental regulations applying to the enterprise.
* Procedures for assessing compliance with environmental regulations.
* Collection of information on environmental and resource efficiency systems and procedures,
* Measurement and recording of current resource usage
* Analysis and recording of current purchasing strategies.
* Analysis current work processes to access information and data Analysis of data and information
* Identification of areas for improvement
* Resource consuming processes
* Determination of quantity and nature of resource consumed
* Analysis of resource flow of different parts of the resource flow process
* Use/conversion of resources
* Causes of low efficiency of use
* Increasing the efficiency of resource use
* Inspection of resource use plans
* Regulations/licensing requirements
* Determine benefit/cost for alternative resource sources
* Benefit/costs for different alternatives
* Components of proposals
* Criteria on ranking proposals
* Regulatory requirements
* Proposals for improving resource efficiency
* Implementation of resource efficiency plans
* Procedures in monitor implementation
* Adjustments of implementation plan
* Inspection of new resource usage

**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. Demonstration
	2. Oral questioning
	3. Written examination
	4. Interview/Third Party Reports
	5. Portfolio (citations/Bwards from GOs and NGOs, certificate of training – local and abroad)
	6. Simulations and role-play
 |
| 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. |

## DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** DA/OS/PM/BC/07/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to lead the implementation of workplace’s safety and health program, 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 and/or its ***indicators*** of its presence, are identified1.2 ***Evaluation and/or work environment*** measurements of OSH hazards/risk existing in the workplace is conducted by  Authorized personnel or agency1.3 ***OSH issues and/or concerns*** raised by workers are  Gathered |
| 1. Identify and implement appropriate control measures
 | 2.1 Prevention ***and control measures***, including use of  s***afety gears / PPE (personal protective equipment)*** for specific hazards  identified and implemented2.2 ***Appropriate risk controls*** based on result of OSH hazard evaluation is recommended.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, procedures and policies/ guidelines
 | 3.1 Information to work team about company OSH program, procedures and policies/guidelines are provided3.2 Implementation of OSH procedures and policies/ guidelines are participated3.3 Team members are trained and advised on OSH standards and procedures3.4 Procedures for maintaining ***OSH-related records*** are implemented |

**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** |
| * Hazards may include but are 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, gases, vapours
* 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)
 |
| * Indicators may include but are 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
 |
| * Evaluation and/or work environment measurements may include but are not limited to:
 | * Health Audit
* Safety Audit
* Work Safety and Health Evaluation
* Work Environment Measurements of Physical and Chemical
* Hazards
 |
| * OSH issues and/or concerns may include but are 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
 |
| * Prevention and control measures may include but are not limited to:
 | * Eliminate the hazard (i.e., get rid of the dangerous machine
* Isolate the hazard (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. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule)
* Use engineering controls to reduce the risk (i.e. use safety guards to machine)
* Use personal protective equipment
* Safety, Health and Work Environment Evaluation
* Periodic and/or special medical examinations of workers
 |
| * Safety gears /PPE (Personal Protective Equipment) may include but are not limited to:
 | * Arm/Hand guard, gloves
* Eye protection (goggles, shield)
* Hearing protection (ear muffs, ear plugs)
* Hair Net/cap/bonnet
* Hard hat
* Face protection (mask, shield)
* Apron/Gown/coverall/jump suit
* Anti-static suits
* High-visibility reflective vest
 |
| * Appropriate risk controls
 | * 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)
 |
| * Contingency measures may include but are not limited to:
 | * Evacuation
* Isolation
* Decontamination
* (Calling designed) emergency personnel
 |
| * Emergency procedures may include but are not limited to:
 | * Fire drill
* Earthquake drill
* Basic life support/CPR
* First aid
* Spillage control
* Decontamination of chemical and toxic
* Disaster preparedness/management
* Use of fire-extinguisher
 |
| * Incidents and emergencies may include but are not limited to:
 | * Chemical spills
* Equipment/vehicle accidents
* Explosion
* Fire
* Gas leak
* Injury to personnel
* Structural collapse
* Toxic and/or flammable vapors emission.
 |
| * OSH-related Records may include but are not limited to:
 | * Medical/Health records
* Incident/Bccident 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:

* Skills on preliminary identification of workplace hazards/risks
* Knowledge management
* Critical thinking skills
* Observation skills
* Coordinating skills
* Communication skills
* Interpersonal skills
* Troubleshooting skills
* Presentation skills
* Training skills

**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. Identifies hazards/risks in the workplace and/or its indicators
2. Requests for evaluation and/or work environment measurements of OSH hazards/risk in the workplace
3. Gathers OSH issues and/or concerns raised by workers
4. Identifies and implements prevention and control measures, including use of PPE (personal protective equipment) for specific hazards
5. Recommends appropriate risk controls based on result of OSH hazard evaluation and OSH issues gathered
6. Establish contingency measures, including emergency procedures in accordance with organization procedures
7. Provides information to work team about company OSH program, procedures and policies/guidelines
8. Participates in the implementation of OSH procedures and policies/guidelines
9. Trains and advises team members on OSH standards and procedures
10. Implements procedures for maintaining OSH-related records
 |
| 1. Resource Implications
 | The following resources should be provided:2.1 Workplace or assessment location2.2 OSH personal records2.3 PPE2.4 Health records |
| 1. Methods of Assessment
 | Competency may be assessed through:3.1 Portfolio Assessment3.2 Interview3.3 Case Study/Situation3.4 Observation/Demonstration and oral questioning |
| 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. |

# CORE UNITS OF COMPETENCY

## PROCUREMENT OF RAW MILK

**UNIT CODE:** DA/OS/PM/CR/01/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to procure raw milk. It involves conducting food safety risk assessment to procure raw milk, preparing to procure raw milk, procuring raw milk, evaluating raw milk procurement and completing raw milk procurement

**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 food safety risk assessment to procure raw milk
 | * 1. Raw milk sources are identified.
	2. Hazard identification is conducted on the raw milk sources based on ***hazard type(s)*** andsource(s)
	3. Identified hazard(s) are analyzed based on their likelihood and consequence(s)
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to procure raw milk
 | * 1. Raw milk sources are selected based on production levels, ***consistency***, geographical locations ***and risk assessment plan***
	2. Terms of raw milk procurement are negotiated according to guidelines by ***regulatory authorities***
	3. Milk collection routes are designed based ongeographical locations, accessibility and efficiency of collection
	4. Means of transport are identified and allocated to routes based on ***work place procedures,*** Dairy industry Act (Cap 336), code of hygienic practice for milk and milk products and code of hygienic practice for milk carriers
	5. Tools, equipment and materials for milk procurement are identified and assembled according to job requirements, Dairy industry Act (Cap 336) and code of hygienic practice for milk and milk products
	6. Labour for milk collection is identified and allocated based on job requirements, public health requirements, Dairy industry Act (Cap 336) and code of hygienic practice for milk and milk products
 |
| 1. Procure raw milk
 | * 1. Raw milk is collected following established collection routes and points, Public Health Act, Dairy industry Act (Cap 336) and code of hygienic practice for milk and milk products
	2. Collected raw milk is transported according to guidelines by regulatory authorities, good manufacturing practices (GMP), Public Health Act, Dairy industry Act (Cap 336), code of hygienic practice for milk and milk products, food, drugs and chemical substances Act (Cap 254) and code of hygienic practice for milk carriers
	3. Raw milk is offloaded at collection centre as per work place procedures, Public Health Act, Dairy industry Act (Cap 336) and code of hygienic practice for milk and milk products
 |
| 1. Evaluate raw milk procurement
 | * 1. A sample of raw milk is collected as per sampling methods, Good Laboratory Practice (GLP) and GMP
	2. Quality and safety of raw milk is evaluated in accordance with the ***milk processing manual***
	3. Quantity of collected milk is assessed based on projected route amounts
	4. Detected faults are reported and rectified in accordance withmilk processing manual and work place procedures
 |
| 1. Complete raw milk procurement
 | * 1. Records of raw milk procurement, rejection and quality are documented based on work place procedures and Dairy industry Act (Cap 336) and risk assessment plan
	2. Procured raw milk is handed over to the relevant value chain actor following work place procedures
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Regulatory authorities may include but not limited to:
 | Bodies responsible for guiding and enforcing set policy and laws on milk handling such as;* Kenya Dairy Board (KDB)
* Kenya Bureau of Standards (KEBS)
* Directorate of Veterinary Services (DVS)
* Kenya Veterinary Board ( KVB)
 |
| 1. Risk assessment plan may include but not limited to:
 | * Risk identification
* Risk analysis
* Risk evaluation
* Risk control/treatment
* Risk communication
 |
| 1. Work place procedures may include but not limited to:
 | Guidelines on;* Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |
| 1. hazards types(s) may include but not limited to:
 | Chemical* Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Myco-toxins
* Heavy metals

Biological* Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
 |
| 1. Milk processing manual may include but not limited to:
 | Milk processing manual includes but not limited to A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |

**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:

* Food safety risk assessment and communication
* Training skills
* Negotiation
* Basic analytical skills
* Food handling skills
* Troubleshooting
* Communication
* Milk equipment handling
* Milk sampling
* Reagent preparation
* Documentation and record keeping.

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Milk production patterns
* Labour requirements
* Production economics
* Good Laboratory Practices
* Milk sampling
* Hazard Analysis Critical Control Point (HACCP) process
* Code of hygienic practice (s)
* Legal requirements
	+ Regulatory
	+ Statutory
* Distance approximation
* Milk quality tests
* Good Manufacturing Practices (GMP)
* Record keeping

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:* 1. Applied food safety risk assessment to procure raw milk
	2. Sourced adequate amount of raw milk at competitive prices
	3. Procured raw milk of desired quality and safety
	4. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	5. Documented and maintained raw milk procurement and food safety records.
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:1. Access to relevant workplace where assessment can take place
2. Appropriately simulated environment where assessment can take place
3. Materials relevant to the proposed activity or tasks
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Oral questioning
	4. Third party report
	5. Practical 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 roles is recommended.  |

## CHILLING OF RAW MILK

**UNIT CODE:** DA/OS/PM/CR/02/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to chill raw milk. It involves conducting food safety risk assessment to chill raw milk, preparing to chill raw milk, chilling raw milk, evaluating raw milk chilling and completing raw milk chilling

**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 food safety risk assessment to chill raw milk
 | * 1. ***Materials and equipment*** for raw milk testing and chilling are identified.
	2. Hazard identification is conducted on the materials and equipment based on ***hazard*** ***type(s)*** and source(s)
	3. Identified hazard(s) are analyzed based on their likelihood and consequence(s)
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programs, operational prerequisite programs and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to chill raw milk
 | * 1. ***Materials and equipment*** for raw milk testing and chilling are assembled and prepared in accordance with the ***milk processing manual*** and the code of hygienic practice for milk and milk products
	2. A sample of raw milk is collected periodically as per ***sampling methods*** , Good Laboratory Practice (GLP) and good manufacturing practices (GMP)
	3. Raw milk quality and safety is assessed in accordance with themilk processing manual
	4. Results of quality and safety assessments are analysed and interpreted in accordance withmilk processing manual and the standard for raw milk
	5. Tested milk is weighed, recorded and ***bulked*** as per work place procedures, public health Act, Food, Drugs and Chemical Substances act, code of hygienic practice for milk and milk products and Dairy Industry Act (Cap 336)
	6. Labour for chilling raw milk is identified and allocated based on job requirements.
 |
| 1. Chill raw milk
 | * 1. ***Cooling parameters*** are set as per themilk processing manual and code of hygienic practice for milk and milk products
	2. Cooling process is run as per operator’s manual and code of hygienic practice for milk and milk products
	3. ***Critical chilling temperature*** is attained in accordance withmilk processing manual
 |
| 1. Evaluate raw milk chilling
 | * 1. Cooling process is monitored as per operator’s manual and GMP
	2. A sample of chilled milk is collected as per sampling procedures, GMP and Good Laboratory Practices (GLP)
	3. Chilled milk quality and safety is assessed in accordance with themilk processing manual
	4. Assessment results of chilled milk are analysed and interpreted in accordance withmilk processing manual and the standard for raw milk
	5. Detected faults are reported and rectified or disposed of in accordance withmilk processing manual and work place procedures
 |
| 1. Complete raw milk chilling
 | * 1. Chilling and testing equipment are cleaned in accordance withmilk processing manual, GMP and code of hygienic practice for milk and milk products
	2. Cleaning and sanitizing programs are established as per the code of hygienic practice for milk and milk products and the cleaning and sanitizing manual
	3. Chilled raw milk records are documented based on work place procedures and code of hygienic practice for milk and milk products
	4. Chilled raw milk reports are written and disseminated to relevant authorities as per work place policy and code of hygienic practice for milk and milk products
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Materials and equipment may include but not limited to
 | Materials* Raw milk
* Testing reagents

Equipment* Testing apparatus
* Bulking containers
* Chilling tanks
 |
| 1. Milk processing manual may includes but not limited to:
 | Milk processing manual includes but not limited to A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. Bulked may includes but not limited to
 | Pooling milk into:* Tanks
* Containers
* Vats
* Silos
 |
| 1. Cooling parameters may include but not limited to:
 | * Temperature
* Time to achieve required temperature
* Temperature maintenance
* Agitation
 |
| 1. Work place procedures may include but not limited to
 | Guidelines on;* Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |
| 1. hazard type(s) may include but not limited to:
 | Chemical * Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Mycotoxins
* Heavy metals

Biological * Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical hazards* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
* Hair
 |
| 1. Critical chilling temperature may include but not limited to:
 | * Specified temperature range for chilling milk
 |
| 1. Cleaning and sanitizing programs may include but not limited to:
 | * Cleaning agents
	+ Concentration
	+ Time
	+ Temperature
	+ Pressure
* Frequency of cleaning
* Cleaning efficiency
* Cleaning checklist
* Cleaning records
 |

**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:

* Weighing
* Milk Sampling
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Documentation and Record keeping
* Communication
* Reagent preparation
* Operation of chilling equipment

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Milk sampling
* Milk quality tests
* Dairy microbiology
* Cooling methods and operations
* Hazard Analysis Critical Control Point (HACCP) process
* Dairy chemistry
* Code of hygienic practice (s)
* Relevant regulations and standards
* Good Laboratory Practices (GLP)
* Sampling techniques
* Good manufacturing practices
* Cleaning methods
* Record keeping

**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 food safety risk assessment to chill raw milk
	2. Assessed quality and safety of milk before chilling
	3. Analyzed and interpreted assessment results of chilled milk
	4. Chilled milk to critical temperature
	5. Cleaned chilling and testing equipment and apparatus
	6. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	7. Documented and maintained raw milk chilling and food safety records
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Oral questioning
	4. Third party report
	5. Practical 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 roles is recommended.  |

## PROCESS FLUID MILK PRODUCTS

**UNIT CODE:** DA/OS/PM/CR/03/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process fluid milk. It involves conducting food safety risk assessment to process fluid milk products, preparing to process fluid milk products, Process fluid milk products, evaluating fluid milk products processing and completing fluid milk products processing

**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 food safety risk assessment to process fluid milk products
 | * 1. ***Fluid milk products*** to produce are determined based on market demand and profitability
	2. Hazard identification is conducted based on ***hazard type(s)*** and source(s).
	3. Identified hazard(s) are analyzed based on their likelihood and consequence(s).
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programs, operational prerequisite programs and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to process fluid milk products
 | * 1. Volume of fluid milk product to produce is determined as per market demand and profitability
	2. ***Materials and equipment*** required are identified, assembled and prepared based on type of fluid milk product and the code of hygienic practice for milk and milk products
	3. A sample of raw material is collected as per ***sampling methods*** and GMP
	4. Quality and safety assessment of raw material is carried out in accordance with the ***milk processing manual***
	5. Results of quality and safety assessments are analyzed and interpreted in accordance withmilk processing manual and the standard for raw milk
	6. Labor for processing fluid milk products is identified and allocated based on job requirements, and the code of hygienic practice for milk and milk products
 |
| 1. Process fluid milk products
 | * 1. Standardized milk is obtained in accordance with milk processing manual and good manufacturing practices (GMP)
	2. Fluid milk products are processed and ***process controls*** monitored based on type of product in accordance with the milk processing manual, Public Health Act, the code of hygienic practice for milk and milk products, GMP and the food safety risk assessment
	3. Fluid milk products are packaged as per milk processing manual, GMP, Public Health Act, and the code of hygienic practice for milk and milk products
	4. Fluid milk products are stored in accordance with the milk processing manual, GMP, Public Health Act, and the code of hygienic practice for milk and milk products
 |
| 1. Evaluate fluid milk products processing
 | * 1. A sample of fluid milk product is collected as per sampling methods, GMP and Good Laboratory Practices (GLP)
	2. Fluid milk product quality and safety is assessed in accordance with themilk processing manual
	3. Results of fluid milk product quality and safety assessments are analysed and interpreted in accordance with the respective product (s) standards and **milk** processing manual
	4. Detected faults are reported and rectified or disposed of in accordance withmilk processing manual and work place procedures
 |
| 1. Complete fluid milk products processing
 | * 1. Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products
	2. ***Cleaning and sanitizing programmes*** are established as per the code of hygienic practice for milk and milk products and the cleaning and sanitizing manual
	3. Dairy waste is segregated, treated and disposed with due regard to ***environment protection and management regulations***, GMP and the code of hygienic practice for milk and milk products
	4. Fluid milk products processing is documented as per ***work place policy*** and the code of hygienic practice for milk and milk products
	5. Fluid milk products processing reports are disseminated to relevant authorities as per work place policy and the code of hygienic practice for milk and milk products
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Fluid milk products may includes but not limited to
 | * Fresh milk
* Extended shelf life
* Ultra Heat Treated (UHT)
 |
| 1. Materials and equipment may include but not limited to
 | Materials* Raw milk
* Flavours
* Packaging materials
* Potable water

Equipment* Cream separator
* Homogenizer
* Heat exchangers
 |
| 1. Process controls may include but not limited to:
 | * Time and temperature combination
* Flow diversion valve
* Clarification
* Homogenization
* Bactofugation
 |
| 1. hazards type(s) may include but not limited to:
 | Chemical* Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Mycotoxins
* Heavy metals

Biological* Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
 |
| 1. Sampling methods may includes but not limited to
 | * Random sampling
* Systematic sampling
* Composite sampling
 |
| 1. Milk processing manual may includes but not limited to
 | A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. Environment protection and management regulations may includes but not limited to
 | * Environmental Management and Coordination Act
* Public Health Act
 |
| 1. Cleaning and sanitizing programmes may include but not limited to:
 | * Cleaning agents
	+ Concentration
	+ Time
	+ Temperature
	+ Pressure
* Frequency of cleaning
* Cleaning efficiency
* Cleaning checklist
* Cleaning records
 |
| 1. Work place policy may includes but not limited to
 | Guidelines on: * Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |

**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:

* Assembling and operation of milk processing equipment
* Measuring
* Milk testing
* Reagent preparation
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Food handling skills
* Sampling skills
* Record keeping and documentation
* Computation
* Communication

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Dairy microbiology
* Dairy chemistry
* Milk Sampling
* Milk quality tests
* Fluid milk products technologies
* Judging and grading of fluid milk products
* Operations management
* Regulatory and Statutory requirements in the dairy industry
* Cleaning of processing equipments
* Hazard Analysis Critical Control Point (HACCP) process
* Codes of hygienic practice(s)
* Good Laboratory Practices (GLP)
* Relevant standards and regulations
* Dairy waste and management
* Good manufacturing practices (GMP)
* Records keeping

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:* 1. Applied food safety measures to process fluid milk products
	2. Assembled correct equipment and materials for processing of fluid milk products
	3. Processed fluid milk products
	4. Assessed quality and safety of fluid milk products
	5. Stored fluid milk products in appropriate packaging materials and conditions
	6. Cleaned milk processing, testing equipment and apparatus
	7. Managed processing wastes
	8. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	9. Documented and maintained processed fluid milk processing and food safety records
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Product analysis
	4. Oral questioning
	5. Third party report
	6. Practical 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 roles is recommended.  |

## PROCESS FERMENTED MILK PRODUCTS

**UNIT CODE:** DA/OS/PM/CR/04/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process fermented milk products. It involves conducting food safety risk assessment to process fermented milk products, preparing to process fermented milk products, processing fermented milk products, evaluating fermented milk products processing, completing fermented milk products processing

**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 food safety risk assessment to process fermented milk products
 | * 1. ***Fermented milk products*** to produce are determined based on market demand and profitability
	2. Hazard identification is conducted based on ***hazard type(s)*** and source(s) of the fermented milk product to produce
	3. Identified hazard (s) are analyzed based on their likelihood and consequence (s)
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programs, operational prerequisite programs and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to process fermented milk products
 | * 1. Volume of fermented milk product to produce is determined as per market demand and profitability
	2. ***Materials and equipment*** required are identified, assembled and prepared based on type of fermented milk product, the code of hygienic practice for milk and milk products and the Food, Drugs and Chemical Substances Act (Cap 254)
	3. A sample of raw material is obtained as per ***sampling methods***, GMP and Good Laboratory Practices (GLP)
	4. Raw material quality and safety is assessed in accordance with the ***milk processing manual*** and the respective product (s) standards
	5. Results of quality and safety assessments are analysed and interpreted in accordance withmilk processing manual and the respective product (s) standards
	6. Labour for processing fermented milk products is identified and allocated based on job requirements, and the code of hygienic practice for milk and milk products
 |
| 1. Process fermented milk products
 | * 1. Standardized milk is obtained in accordance with milk processing manual, good manufacturing practices (GMP) and the standard for pasteurized milk
	2. Fermented milk products are processed and ***process controls*** monitored based on type of product in accordance with the milk processing manual, Public Health Act the code of hygienic practice for milk and milk products, GMP and the food safety risk assessment
	3. Fermented milk products are packaged as per milk processing manual GMP, Public Health Act and the code of hygienic practice for milk and milk products
	4. Fermented milk products are stored in accordance with the milk processing manual, GMP, Public Health Act and the code of hygienic practice for milk and milk products
 |
| 1. Evaluate fermented milk products processing
 | * 1. A sample of fermented milk product is collected as per sampling methods, GMP and GLP
	2. Fermented milk product quality and safety is assessed in accordance with themilk processing manual
	3. Results of fermented milk product quality and safety tests are analysed and interpreted in accordance withmilk processing manual
	4. Detected faults are reported and rectified or disposed of in accordance withmilk processing manual, work place procedures and the code of hygienic practice for milk and milk products
 |
| 1. Complete fermented milk products processing
 | * 1. Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products
	2. ***Cleaning and sanitizing*** programs are established as per the code of hygiene practice for milk and milk products and the cleaning and sanitizing manual
	3. Dairy waste is segregated, treated and disposed with due regard to ***environment protection and management regulations***, GMP and the code of hygienic practice for milk and milk products
	4. Fermented milk products processing is documented as per ***work place policy*** and the code of hygienic practice for milk and milk products
	5. Fermented milk products processing reports are disseminated to relevant authorities as per work place policy and the code of hygienic practice for milk and milk products
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Fermented milk products may include but not limited to
 | * Yoghurt
* Cultured buttermilk
* Probiotics milk
* Cultured milk
 |
| 1. Materials and equipment may include but not limited to
 | Materials* Raw milk
* Sweeteners
* Flavours and colours
* Processing ingredients
* Packaging materials

Equipment* Cream separator
* Homogenizer
* Heat exchangers
 |
| 1. Sampling methods may includes but not limited to
 | * Random sampling
* Systematic sampling
* Composite sampling
 |
| 1. Milk processing manual may includes but not limited to
 | A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. hazards type(s) may include but not limited to:
 | Chemical* Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Mycotoxins
* Heavy metals

Biological hazards* Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical hazards* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
 |
| 1. Environment protection and management regulations may includes but not limited to
 | * Environmental Management and Coordination Act
* Public Health Act
 |
| 1. Process controls may include but not limited to:
 | * Time and temperature combination
* Flow diversion valve
* Clarification
* Homogenization
* Bactofugation
 |
| 1. Cleaning and sanitizing programs may include but not limited to:
 | * Cleaning agents
	+ Concentration
	+ Time
	+ Temperature
	+ Pressure
* Frequency of cleaning
* Cleaning efficiency
* Cleaning checklist
* Cleaning records
 |
| 1. Work place policy may includes but not limited to
 | Guidelines on: * Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |

**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:

* Assembling and operation of milk processing equipment
* Measuring
* Milk sampling
* Milk testing
* Reagent preparation
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Food handling skills
* Computation
* Communication
* Record keeping and documentation

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Dairy microbiology
* Dairy chemistry
* Milk sampling
* Milk quality tests
* Fermented milk products technology
* Operations management
* Judging and grading of fermented milk products
* Hazard Analysis Critical Control Point (HACCP) process
* Codes of hygienic practice (s)
* Relevant standards and regulations
* Cleaning of processing equipments
* Dairy waste and management
* Good manufacturing practices (GMP)
* Good Laboratory Practices (GLP)
* Basic Laboratory practices
* Records keeping

**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 food safety risk assessment to process fermented milk products
	2. Assembled correct equipment and materials for processing of fermented milk products
	3. Processed fermented milk products
	4. Assessed quality and safety of fermented milk products
	5. Stored fermented milk products in appropriate packaging materials and conditions
	6. Cleaned processing and testing equipment and apparatus
	7. Managed processing wastes
	8. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	9. Documented and maintained fermented milk products processing and food safety records
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Product analysis
	4. Oral questioning
	5. Third party report
	6. Practical 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 roles is recommended.  |

## PROCESS CONCENTRATED MILK PRODUCTS

**UNIT CODE:** DA/OS/PM/CR/05/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process concentrated milk products. It involves conducting food safety risk assessment to process concentrated milk products, preparing to process concentrated milk products, processing concentrated milk products, evaluating concentrated milk products processing and completig concentrated milk products processing

**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 food safety risk assessment to process concentrated milk products
 | * 1. ***Concentrated milk products*** to produce are determined based on market demand and profitability
	2. Hazard identification is conducted based on ***hazard type(s)*** and source(s) of the concentrated milk products determined
	3. Identified hazard(s) are analyzed based on their likelihood and consequence(s)
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programs, operational prerequisite programs and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to process concentrated milk products
 | * 1. Quantity of concentrated milk product to produce is determined as per market demand and profitability
	2. ***Materials and equipment*** required are identified, assembled and prepared based on type of concentrated milk product, the code of hygienic practice for milk and milk products, GMP, the food safety risk assessment and the Food, Drugs and Chemical Substances Act (Cap 254)
	3. A sample of raw material is collected as per ***sampling methods,*** good manufacturing practices (GMP) and Good Laboratory Practices ( GLP)
	4. Raw material quality and safety is assessed in accordance with the ***milk processing manual***
	5. Results of quality and safety tests are analysed and interpreted in accordance withmilk processing manual and the respective product(s) standards
	6. Labour for processing concentrated milk products is identified and allocated based on job requirements and the code of hygienic practice for milk and milk products
 |
| 1. Process concentrated milk products
 | * 1. Raw milk is standardized to the required fat content in accordance with milk processing manual and GMP
	2. Concentrated milk products are processed and ***process controls*** monitored based on type of product in accordance with the milk processing manual, GMP, Public Health Act the code of hygienic practice for milk and milk products and the food safety risk assessment
	3. Concentrated milk products are packaged as per milk processing manual, GMP, Public Health Act, and the code of hygienic practice for milk and milk products
	4. Concentrated milk products are stored in accordance with the milk processing manual, GMP, Public Health Act and the code of hygienic practice for milk and milk products
 |
| 1. Evaluate concentrated milk products processing
 | * 1. A sample of concentrated milk product is collected as per sampling methods, GMP and GLP
	2. Concentrated milk product quality and safety is assessed in accordance with themilk processing manual
	3. Results of concentrated milk product quality and safety tests are analysed and interpreted in accordance withmilk processing manual and the respective product(s) standards
	4. Efficiency of production is assessed based on expected yield in accordance withmilk processing manual
	5. Detected faults are reported and rectified or disposed of in accordance withmilk processing manual and work place procedures and the code of hygienic practice for milk and milk products
 |
| 1. Complete concentrated milk products processing
 | * 1. Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products
	2. Cleaning and sanitizing programmes are documented as per the code of hygienic practice for milk and milk products
	3. Dairy waste is segregated, treated and disposed with due regard to ***environment protection and management regulations***, GMP and the code of hygienic practice for milk and milk products
	4. Concentrated milk products processing is documented as per ***work place policy*** and the code of hygienic practice for milk and milk products
	5. Concentrated milk products processing reports are disseminated to relevant authorities as per work place policy and the code of hygienic practice for milk and milk products
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Concentrated milk products may include but not limited to
 | * Sweetened condensed milk
* Evaporated milk / unsweetened condensed milk
* Dried skim milk
* Dried whole milk
* Whey powder
 |
| 1. Materials and equipment may include but not limited to
 | Materials* Raw milk
* Cream
* Sweeteners
* Testing reagents and media
* Packaging material
* Cleaning material

Equipment* Cream separator
* Milk drier
* Heat exchangers / evaporators
 |
| 1. Sampling procedures may includes but not limited to
 | * Random sampling
* Systematic sampling
* Composite sampling
 |
| 1. hazards type(s) may include but not limited to:
 | Chemical* Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Mycotoxins
* Heavy metals

Biological hazards* Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical hazards* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
 |
| 1. Milk processing manual may includes but not limited to
 | A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. Environment protection and management regulations may includes but not limited to
 | * Environmental Management and Coordination Act
* Public Health Act
 |
| 1. Process controls may include but not limited to:
 | * Time and temperature combination
* Flow diversion valve
* Clarification
* Homogenization
* Bactofugation
 |
| 1. Cleaning and sanitizing programmes may include but not limited to:
 | * Cleaning agents
	+ Concentration
	+ Time
	+ Temperature
	+ Pressure
* Frequency of cleaning
* Cleaning efficiency
* Cleaning checklist
* Cleaning records
 |
| 1. Work place policy may includes but not limited to
 | Guidelines on;* Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |

**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:

* Assembling and operation of milk processing equipment
* Measuring
* Milk sampling
* Milk testing
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Food handling skills
* Reagent preparation
* Computation
* Communication
* Record keeping and documentation

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Milk testing
* Cream production
* Heat transfer
* Evaporated and condensed milk technology
* Hazard Analysis Critical Control Point (HACCP) process
* Codes of hygienic practice (s)
* Relevant standards and regulations
* Operations management
* Drying technology
* Judging and grading of concentrated milk products
* Good manufacturing practices
* Good laboratory practices
* Cleaning of processing equipment
* Dairy waste and management
* Record keeping

**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 food safety risk assessment to process concentrated milk products
	2. Assembled correct equipment and materials for processing of concentrated milk products
	3. Processed concentrated milk products
	4. Assessed quality and safety of milk and concentrated milk products
	5. Stored concentrated milk products in appropriate packaging materials and conditions
	6. Cleaned milk processing, testing equipment and apparatus
	7. Managed processing wastes as per recommended procedures
	8. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Product analysis
	4. Oral questioning
	5. Third party report
	6. Practical 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 roles is recommended.  |

## PROCESS FAT BASED MILK PRODUCTS

**UNIT CODE:** DA/OS/PM/CR/06/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process fat based milk products. It involves conducting food safety risk assessment to process fat based milk products, preparing to process fat based milk products, processing fat-based milk products, evaluating fat based milk products processing and completing fat-based milk products processing

**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 food safety risk assessment to process fat based milk products
 | * 1. ***Fat based milk products*** to produce are determined based on market demand and profitability
	2. Hazard identification is conducted based on ***hazard type(s)*** and source(s) of fat based milk products
	3. Identified hazard(s) are analyzed based on their likelihood and consequence(s)
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programs, operational prerequisite programs and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to process fat based milk products
 | * 1. Volume of fat-based milk product to produce is determined as per market demand and profitability
	2. ***Materials and equipment*** required are identified, assembled and prepared based on type of fat-based milk product, the code of hygienic practice for milk and milk products, GMP, the food safety risk assessment and the Food, Drugs and Chemical Substances Act (Cap 254)
	3. A sample of raw material is obtained as per ***sampling methods***, GMP and GLP
	4. Raw material quality and safety is assessed in accordance with the ***milk processing manual***
	5. Results of quality and safety assessments are analysed and interpreted in accordance withmilk processing manual and the respective product (s) standards
	6. Labour for processing fat-based milk products is identified and allocated based on job requirements and the code of hygienic practice for milk and milk products
 |
| 1. Process fat-based milk products
 | * 1. Cream is obtained from milk in accordance with milk processing manual , Public Health Act and good manufacturing practices (GMP)
	2. Fat based milk products are processed and ***process controls*** monitored based on type of product in accordance with the milk processing manual, GMP, Public Health Act, the code of hygienic practice for milk and milk products and the food safety risk assessment
	3. Fat based milk products are packaged as per m ilk processing manual, Public Health Act, GMP and the code of hygienic practice for milk and milk products
	4. Fat based milk products are stored in accordance with the milk processing manual, Public Health Act, GMP and the code of hygienic practice for milk and milk products
 |
| 1. Evaluate fat based milk products processing
 | * 1. A sample of fat-based milk product is collected as per sampling methods, GMP and GLP
	2. Fat based milk product quality and safety is assessed in accordance with themilk processing manual and the ***respective standard***
	3. Results of fat-based milk product quality and safety assessments are analysed and interpreted in accordance withmilk processing manual the respective product (s) standards
	4. Efficiency of production is assessed based on expected yield in accordance withmilk processing manual
	5. Detected faults are reported and rectified or disposed of in accordance withmilk processing manual, work place procedures and the code of hygienic practice for milk and milk products
 |
| 1. Complete fat-based milk products processing
 | 1. Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products
2. ***Cleaning and sanitizing programmes*** are documented as per the code of hygienic practice for milk and milk products and the cleaning and sanitizing manual
3. Dairy waste is segregated, treated and disposed with due regard to environment protection and management regulations, GMP and the code of hygienic practice for milk and milk products
4. Fat based milk products processing is documented as per work place policy and the code of hygienic practice for milk and milk products
5. Fat based milk products processing reports are disseminated to relevant authorities as per work place policy and the code of hygienic practice for milk and milk products
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Fat based milk products may includes but not limited to
 | * Cream
* Butter
* Anhydrous milk fat / ghee
* Ice cream
 |
| 1. Materials and equipment may include but not limited to
 | Materials* Raw milk
* Milk powder
* Cream
* Sweeteners
* Flavours
* Food colour
* Salt
* Stabilizers
* Emulsifiers
* Testing reagents and media
* Packaging material
* Cleaning material

Equipment* Cream separator
* Ice cream freezer
* Butter churn
* Heat exchangers
 |
| 1. Respective standards may include but not limited to:
 | * Test methods
* Sampling methods
* Codes of practice (s)
* Product standards
 |
| 1. Sampling methods may includes but not limited to
 | * Random sampling
* Systematic sampling
* Composite sampling
 |
| 1. Milk processing manual may includes but not limited to
 | A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. hazards type(s) may include but not limited to:
 | Chemical* Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Mycotoxins
* Heavy metals

Biological* Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical hazards* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
 |
| 1. Environment protection and management regulations may includes but not limited to
 | * Environmental Management and Coordination Act
* Public Health Act
 |
| 1. Process controls may include but not limited to:
 | * Time and temperature combination
* Flow diversion valve
* Clarification
* Homogenization
* Bactofugation
 |
| 1. Cleaning and sanitizing programmes may include but not limited to:
 | * Cleaning agents
	+ Concentration
	+ Time
	+ Temperature
	+ Pressure
* Frequency of cleaning
* Cleaning efficiency
* Cleaning checklist
* Cleaning records
 |
| 1. Work place policy may includes but not limited to
 | Guidelines on;* Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |

**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:

* Assembling and operation of milk processing equipment
* Measuring
* Milk sampling
* Milk testing
* Reagent preparation
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Food handling skills
* Computation
* Communication
* Documentation and record keeping

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Milk sampling
* Milk testing
* Cream production
* Butter making technology
* Ghee making technology
* Ice cream technology
* Fat based products substitutes
* Judging and grading of fat based milk products
* Hazard Analysis Critical Control Point (HACCP) process
* Codes of hygienic practice (s)
* Relevant standards and regulations
* Operations management
* Good manufacturing practices
* Good laboratory practices
* Cleaning of processing equipments
* Dairy waste and management
* Records keeping

**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 food safety risk assessment to process fat based milk products
	2. Assembled correct equipment and materials for processing of fat-based milk products
	3. Processed fat based milk products
	4. Assessed quality and safety of milk and fat-based milk products
	5. Stored fat-based milk products in appropriate packaging materials and conditions
	6. Cleaned processing and testing equipment and apparatus
	7. Managed processing wastes as per recommended procedures
	8. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	9. Documented and maintained fat-based milk products processing and food safety records
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Product analysis
	4. Oral questioning
	5. Third party report
	6. Practical 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 roles is recommended.  |

##

## PRODUCE CHEESE

**UNIT CODE :** DA/OS/PM/CR/07/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce ripened and unripened cheese. It involves conducting food safety risk assessment to produce cheese, preparing to produce cheese, producing cheese, evaluating cheese processing and completing cheese processing.

**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 food safety risk assessment to produce cheese
 | * 1. ***Cheese varieties*** to produce are determined based on market demand and profitability
	2. Hazard identification is conducted based on ***hazard type(s)*** and source(s)
	3. Identified hazard (s) are analyzed based on their likelihood and consequence (s)
	4. Hazard evaluation is conducted based on the level of risk and prioritization
	5. Hazard control or treatment is applied based on prerequisite programs, operational prerequisite programs and HACCP plan.
	6. Risk management plan is communicated as per policies for internal and external communication
 |
| 1. Prepare to produce cheese
 | * 1. Quantity of cheese variety to produce is determined as per market demand and profitability
	2. ***Materials and equipment*** required are identified, assembled and prepared in accordance with the ***milk processing manual,*** good manufacturing practices (GMP), the code of hygienic practice for milk and milk products, the food safety risk assessment and the Food, Drugs and Chemical Substances Act (Cap 254)
	3. A sample of raw material is obtained as per ***sampling methods***, GMP and Good Laboratory Practices (GLP)
	4. Raw material quality and safety is assessed in accordance with the*milk processing manual*
	5. Results of quality and safety assessments are analysed and interpreted in accordance withmilk processing manual and the respective product (s) standards
	6. Labor for producing cheese varieties is identified and allocated based on job requirements and the code of hygienic practice for milk and milk products
 |
| 1. Produce cheese
 | * 1. Standardized milk is obtained in accordance with milk processing manual and GMP
	2. Cheese is produced and ***process controls*** monitored based on variety in accordance with the milk processing manual, Public Health Act, GMP, the code of hygienic practice for milk and milk products and the food safety risk assessment
	3. Cheese is packaged as per milk processing manual, GMP, Public Health Act, the code of hygienic practice for milk and milk products and the respective standards
	4. Cheese is stored in accordance with the milk processing manual, Public Health Act, GMP and the code of hygienic practice for milk and milk products
 |
| 1. Evaluate cheese processing
 | * 1. A sample of cheese variety is obtained as per sampling methods, GMP and GLP
	2. Cheese ***quality and safety is assessed*** in accordance with themilk processing manual and the respective standards
	3. Results of cheese quality and safety assessments are analysed and interpreted in accordance withmilk processing manual and the respective product(s) standards
	4. Efficiency of production is assessed based on expected yield in accordance withmilk processing manual
	5. Detected faults are reported and rectified or disposed of in accordance withmilk processing manual, work place procedures and the code of hygienic practice for milk and milk products
 |
| 1. Complete cheese processing
 | 1. Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products
2. ***Cleaning and sanitizing programmes*** are documented as per the code of hygienic practice for milk and milk products and cleaning and sanitizing manual
3. Dairy waste is segregated, treated and disposed with due regard to ***environment protection and management regulations***, GMP and the code of hygienic practice for milk and milk products
4. Cheese processing is documented as per ***work place policy*** and the code of hygienic practice for milk and milk products
5. Cheese processing reports are disseminated to relevant authorities as per work place policy and the code of hygienic practice for milk and milk products
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range**  |
| 1. Cheese varieties may includes but not limited to
 | Ripened* Gouda
* Cheddar

Unripened* Cottage
* Mozzarella
* Queso Blanco
* Cream cheese
* Feta

Processed cheese |
| 1. Materials and equipment may include but not limited to
 | Materials * Raw milk
* Milk coagulants
* Salts
* Flavours

Equipment* Cheese vat
* Cheese press
* Cheese knife
* Cheese cloth
* Sieve
* Stirrer
 |
| 1. Process controls may include but not limited to:
 | * Time and temperature combination
* Flow diversion valve
* Clarification
* Homogenization
* Bactofugation
 |
| 1. Sampling procedures may includes but not limited to
 | * Random sampling
* Systematic sampling
* Composite sampling
 |
| 1. Quality and safety is assessed may includes but not limited to
 | * Organoleptic
* Chemical
* Microbiological
 |
| 1. Milk processing manual may
 | A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. hazards type(s) may include but not limited to:
 | Chemical* Pesticides
* Veterinary drugs
* Herbicides
* Fungicides
* Paint
* Preservatives
* Detergents
* Disinfectants
* Mycotoxins
* Heavy metals

Biological* Bacteria
* Viruses
* Fungi
* Protozoa
* Somatic cells

Physical* Broken metal
* Broken glass
* Wires
* Sticks
* Insects
 |
| 1. Cleaning and sanitizing programs may include but not limited to:
 | * Cleaning agents
	+ Concentration
	+ Time
	+ Temperature
	+ Pressure
* Frequency of cleaning
* Cleaning efficiency
* Cleaning checklist
* Cleaning records
 |
| 1. Transformed may includes but not limited to
 | Manipulating curd to obtain desired properties by:* Shaping
* Texturing
* Pressing
* Addition of additives
 |
| 1. Work place procedures may include but not limited to
 | Guidelines on;* Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |
| 1. Environment protection and management regulations may includes but not limited to
 | * Environmental Management and Coordination Act
* Public Health Act
 |

**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:

* Assembling and operation of cheese processing and testing equipment
* Measuring
* Milk sampling
* Milk testing
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Food handling skills
* Communication
* Reagent preparation
* Documentation and record keeping

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Dairy Chemistry
* Dairy microbiology
* Starter cultures and food additives
* Fermentation
* Milk sampling
* Milk testing
* Hygienic milk handling
* Cheese processing technologies
* Cheese judging and grading
* Hazard Analysis Critical Control Point (HACCP) process
* Codes of hygienic practice (s)
* Relevant standards and regulations
* Operations management
* Type of soils, cleaning agents and tools
* Dairy equipment cleaning procedures
* Good manufacturing practices
* Good laboratory practices
* Dairy waste management
* Record keeping.

**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 food safety risk assessment to produce cheese
	2. Assembled correct equipment and materials for producing cheese
	3. Produced cheese varieties
	4. Assessed quality and safety of milk and cheese varieties
	5. Stored cheese in appropriate packaging materials and conditions
	6. Cleaned cheese making and quality testing equipment and apparatus
	7. Managed cheese production wastes as per recommended procedures
	8. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	9. Documented and maintained cheese production and food safety records
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Product analysis
	4. Oral questioning
	5. Third party report
	6. Practical 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 roles is recommended.  |

## CONTROL QUALITY OF DAIRY PRODUCTS

**UNIT CODE:** DA/OS/PM/CR/08/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to control the quality of dairy products. It involves preparing to control quality of dairy products, controlling quality of dairy products, evaluating quality control of dairy products and completing quality control of dairy products

**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 to control quality of dairy products
 | 1. ***Item*** to assess is determined as per the requirements of the respective standards, food safety risk assessment, good manufacturing practices (GMP), good laboratory practice and work place procedures.
2. ***Requirements*** for assessment are assembled based on the type of item to assess and ***standard operating procedures***
3. A sample of item to be assessed is collected as per ***sampling methods***, GMP and Good laboratory practices (GLP)
4. Requirements for assessment are prepared in accordance with the ***milk processing manual,*** GMP and requirements of the respective standards
5. Labour for carrying out quality control is identified and allocated based on job requirements and requirements of the respective standards
 |
| 2. Control quality of dairy products | * 1. ***Quality and safety of the product*** is assessed in accordance with the requirements of the respective standards and themilk processing manual based on the results of sample collected
	2. Results of quality and safety assessments are analysed and interpreted in accordance withthe requirements of the respective standards and the milk processing manual
 |
| 3. Evaluate quality control of dairy products | * 1. ***Quality assurance procedures*** appliedin accordance withmilk processing manual and GMP
	2. Efficiency of quality control is assessed in accordance withmilk processing manual
	3. Detected faults are reported and ***rectified*** in accordance withmilk processing manual and work place procedures
 |
| 4. Complete quality control of dairy products | * 1. Quality control equipment, apparatus and facilities are cleaned according to the milk processing manual, GMP, good laboratory practice and standard operating procedures
	2. Quality control equipment, apparatus and facilities are ***maintained*** according to operator’s manuals, good laboratory practice and standard operating procedures
	3. Laboratory waste is segregated, treated and disposed with due regard to ***environment protection and management regulations***, GMP, good laboratory practice and standard operating procedures
	4. Quality control reports are written and documented as per ***work place policy*** good laboratory practice and standard operating procedures
	5. Quality control reports are disseminated to ***relevant authorities*** as per standard operating procedures and work place policy
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Item may include but not limited to
 | * Raw materials (Raw milk, processing ingredients and additives)
* Dairy products
* Dairy plant environment
* Dairy processing equipment
* Water
* Packaging materials
* Treated waste
 |
| 1. Requirements may include but not limited to
 | * Reagents
* Media
* Quality control equipment and apparatus
 |
| 1. Standard operating procedures may include but not limited to:
 | * Proper labelling of reagents
* Proper handling and storage of reagents
* Assembling of apparatus
* Proper disposal of waste
 |
| 1. Quality and safety of sampled item may include but not limited to:
 | * Food safety parameters
	+ Pesticide residues
	+ Detergents and sanitizers
	+ Packaging materials
	+ Micro organisms
		- Ecoli
		- Salmonella
		- Yeast and molds
* Compositional parameters
	+ Milk fat
	+ Milk solids not fat
	+ Vitamins
 |
| 1. Sampling procedures may include but not limited to
 | * Random sampling
* Systematic sampling
* Composite sampling
 |
| 1. Milk processing manual may include but not limited to
 | A guide on milk and milk products processing procedures by;* DTI-IFAD(SDCP)
* FAO-DTI
* DTI-USAID
 |
| 1. Maintained may includes but not limited to
 | Routine maintenance activities through;* Lubrication of moving parts
* Replacing worn out parts
* Repairing broken parts
* Calibration
 |
| 1. Rectified may includes but not limited to:
 | * Correction
* Corrective action
* Review and update risk management plan
 |
| 1. Quality assurance procedures may include but not limited to
 | Practices undertake to confirm fulfillment of quality:* Hazard analysis critical control point (HACCP)
* Quality certification (KEBS, ISO)
 |
| 1. Environment protection and management regulations may include but not limited to
 | * Environmental Management and Coordination Act
* Public Health Act
 |
| 1. Relevant authorities may include but not limited to:
 | * Kenya Dairy Board (KDB)
* Kenya Bureau of Standards (KEBS)
* Directorate of Veterinary Services (DVS)
* Ministry of Health- Public Health
 |
| 1. Work place policy may include but not limited to
 | Guidelines on;* Human resource development
* Record keeping
* Environment safety
* Resource allocation
* Procurement policy
* Labour laws/regulations
 |

**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
* Assembling and operation of quality control equipment
* Measuring
* Sampling skills
* Food handling skills
* Food safety risk assessment and communication
* Training skills
* Trouble-shooting
* Equipment maintenance
* Milk testing
* Reagent and Media preparation
* Computation
* Communication

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Standards for Dairy products
* Quality control and assurance.
* Dairy microbiology
* Dairy chemistry
* HACCP process
* Codes of hygienic practice (s)
* Relevant regulations
* Sampling techniques
* Good manufacturing practices
* Good laboratory practices
* Cleaning of quality control facilities
* Laboratory waste and management
* Record keeping

**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. Assembled correct equipment and materials for quality control
	2. Obtained the sample to be assessed
	3. Prepared quality control equipment and samples
	4. Assessed quality and safety of sampled item
	5. Analyzed and interpreted results of quality and safety assessments
	6. Cleaned milk testing equipment and apparatus
	7. Managed laboratory wastes
	8. Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	9. Documented and maintained quality control and food safety records
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:2.1 Access to relevant workplace where assessment can take place2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment
 | Competency may be assessed through:1. Observation
2. Written tests
3. Product analysis
4. Oral questioning
5. Third party report
6. Practical 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 roles is recommended.  |

## MANAGE DAIRY BUSINESS

**UNIT CODE:** DY/OS/PM/CR/09/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage a dairy business. It involves preparing to manage Dairy business, managing dairy business, evaluating management of dairy business and completing management of a dairy business

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**These are assessable statements which specify the required level of performance for each of the elements.***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare to manage Dairy business | 1. Business plan is developed based on the identified ***business venture***
2. Strategic plan is prepared in accordance with the business plan.
3. ***Food safety risk management plan*** is developed based on risk assessment carried out
4. ***Budget*** is prepared based on the strategic plan.
5. Work plan is prepared in accordance with ***dairy business activities.***
6. Procurement plan is prepared based on budget, work plan and strategic plan for the dairy business.
7. ***Resources*** are procured based on the procurement plan and work place procedures.
8. Resources are allocated based on dairy business venture and work plan.
9. Labor for dairy business is identified and allocated based on job requirements.
10. Information Management System is identified based on standard management principles.
 |
| 2. Manage dairy business | * 1. Dairy business products are produced in accordance with business plan, the respective standards and business venture
	2. Dairy business activities are coordinated based on standard management principles and workplace policy
	3. Dairy business duties are assigned and resources are allocated based on dairy enterprise and work place policy
	4. Authorities and responsibilities to run dairy business activities is delegated based on dairy enterprise and work place policy
	5. Utilization of finances is controlled based on management accounting principles.
	6. Labour is recruited and organized based on the workplace policy and selected dairy venture.
	7. Food safety risk management plan is implemented based on risk assessment carried out
 |
| 3. Evaluate management of dairy business | * 1. ***Financial report*** is generated and interpreted based on management accounting principles.
	2. Dairy business activities are monitored and evaluated based on strategic plan and dairy business objectives.
	3. Food safety risk management plan is evaluated based on risk assessment carried out
	4. The reports generated are communicated to the relevant management for action
	5. Faults are reported and ***rectified*** based on workplace policy and the updated risk management plan
 |
| 4. Complete management of a dairy business | 4.1 Dairy business management records are maintained according to work place policy* 1. Dairy business management reports are disseminated to the relevant authority in accordance with workplace policy
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Budget may includes but not limited to:
 | Financial plan describing:* Assets and liabilities
* Cost and expenses
* Cash flow
 |
| 1. Resources may includes but not limited to:
 | * Labour
* Capital
* Land
* Management Information System
* Processing and testing materials
* Operating licenses
 |
| 1. Food safety risk management plan may include but not limited to:
 | * Process flow diagrams
* Food safety team
* Hazards
* Controls of hazards
* Critical limits for each hazard
* Prerequisite programmes
* Operational prerequisite programs
* Monitoring procedures
* Frequency of monitoring
* Monitoring and measuring equipment
* Responsibility
* Records to be maintained
* Resources needed
* Verification planning
* HACCP plan
 |
| 1. Business venture may include but not limited to
 | * Milk procurement
* Chilling of milk
* Fluid milk processing
* Fermented milk processing
* Fat based milk products processing
* Concentrated milk products processing
* Cheese production
* Quality control of dairy products
 |
| 1. Rectified may includes but not limited to
 | * Correction
* Corrective action
* Update risk management plan
 |
| 1. Financial report may include but not limited to
 | * Balance sheet
* Profit and loss account
* Cash flow statement
 |

**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:

* Planning
* Organizing
* Public relation
* Food handling skills
* Food safety risk assessment and communication
* Training skills
* Communication
* Negotiation
* Decision making

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Strategic planning
* Resource management
* Financial management
* Human resource management and industrial relation
* Food safety management plan
* Risk assessment
* Hazard Analysis Critical Control Point (HACCP) process
* Public Safety and Security
* Sales and Marketing
* Procurement

**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 a Strategic Plan
	2. Developed a food safety risk management plan
	3. Prepared a budget
	4. Prepared a financial plan
	5. Prepared work plan
	6. Prepared procurement plan
	7. Monitored and evaluated dairy business activities
	8. Implemented food safety risk management plan
	9. Evaluated food safety risk management plan
 |
| 1. Resource Implications for competence certification
 | The following resources must be provided:* 1. Access to relevant workplace where assessment can take place
	2. Appropriately simulated environment where assessment can take place
	3. Materials relevant to the proposed activity or tasks
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Oral questioning
	4. Interviews
	5. Assignments
 |
| 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 roles is recommended.  |