****

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**DAIRY PROCESSING** **TECHNOLOGIST**

**LEVEL 4**

****

**TVET CDACC**

**P.O. BOX 15745-00100**

**NAIROBI**

First published 2018

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint, Vision 2030 and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution of Kenya 2010 and this resulted in the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET 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 Processing Technology Level 4. These Occupational Standards will also be the basis for assessment of an individual for competence certification. It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for Food processing sector’s growth and development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

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

The Technical and Vocational Education and Training Act No. 29 of 2013 and Sessional Paper No. 4 of 2016 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET in order to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Food Technology Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for Dairy Processing Technologist. These standards will be the basis for development of competency-based curriculum for Dairy Processing Technologist Level 4.

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

I am grateful to the Council Members, Council Secretariat, Food Technology SSAC, expert workers and all those who participated in the development of these Occupational Standards.

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGEMENT

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

I appreciate the funding of the Government of Canada and its implementing partner Colleges and Institutes Canada (CICan) which enabled the development of these standards through the Kenya Education for Employment Program (KEFEP).

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

I also appreciate Nyeri National Polytechnic and its Canadian technical partners from Cégep Saint-Jean-sur-Richelieu, Collège Communautaire du Nouveau-Brunswick and Champlain Regional College who collaborated to identify industry skills gaps and develop these standards.

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

**CHAIRPERSON**

**FOOD PROCESSING SECTOR SKILLS ADVISORY COMMITTEE**

## 

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# ABBREVIATIONS AND ACRYNOMYS

CBET Competency Based Education and Training

CC Collège Champlain

CCNB Collège Communautaire du Nouveau-Brunswick

CDACC Curriculum Development Assessment and Certification Council

CSTJ Cégep Saint-Jean-sur-Richelieu

DACUM Develop a Curriculum

FAO Food and Agriculture Organization

GMP Good Manufacturing Practices

IFAD International Fund for Agricultural Development

MoE Ministry of Education Science and Technology

NOS National Occupation Standard

OS Occupational Standard

OSHS Occupational Safety and Health Standards

SOP Standard Operating Procedure

SSAC Sector Skills Advisory Committee

TVETA Technical and Vocational Education and Training Authority

# KEY TO UNIT CODE

**DA/OS/PM/BC/01/4/A**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Control version

# OVERVIEW

The Dairy Processing Technologist Level 4 qualification consists of competencies that an individual must achieve to enable him/her to collect raw milk, process pasteurized milk, produce fermented milk products and control quality of milk and milk products. It also enables an individual to package milk product.

The units of competency leading to Dairy Processing Technologist Level 4 qualification include the following competencies:

**Basic Units of Competency**

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

**Common Units of Competency**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| DA/OS /PM/CC/01/4**/**A | Clean and sanitize dairy equipment |

**Core Units of Competency**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| DA/OS /PM/CR/01/4**/**A | Collect raw milk |
| DA/OS /PM/CR/02/4**/**A | Process pasteurized milk |
| DA/OS /PM/CR/03/4**/**A | Produce fermented milk products |
| DA/OS /PM/CR/04/4**/**A | Control quality of milk and milk products |
| DA/OS /PM/CR/05/4**/**A | Package milk product |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** DA/OS /PM/BC/01/4/A

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Active listening
* Interpretation
* Negotiation
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE NUMERACY SKILLS

**UNIT CODE:** DA/OS /PM/BC/02/4/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate numeracy skills. It involves identifying and using whole numbers and simple fractions, decimals and percentages for work, identifying, measuring and estimating familiar quantities for work, reading and using familiar maps, plans and diagrams for work, identifying and describing common 2D and some 3D shapes for work, constructing simple tables and graphs for work using familiar data and identifying and interpreting information in familiar tables, graphs and charts for work

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Simple measuring equipment may include but not limited to: | * Rulers * Watches/clocks * Scales * Thermometers * AVO meter |
| 1. Common 2D shapes and common 3D shapes may include but not limited to: | * Round * Square * Rectangular * Triangle * Sphere * Cylinder * Cube * Polygons * Cuboids |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE DIGITAL LITERACY

**UNIT CODE:** DA/OS/PM/BC/03/4/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software, applying computer software in solving task sand applying internet and email in communication at workplace.

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical
* Interpretation
* Typing
* Communication
* Computing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE ENTREPRENEURIAL SKILLS

**UNIT CODE:** DA/OS/PM/BC/04/4/A

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Marketing
* Advertising
* Basic bookkeeping
* Accounting
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE EMPLOYABILITY SKILLS

**UNIT CODE:** DA/OS/PM/BC/05/4/A

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE:** DA/OS/PM/BC/06/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution, demonstrating sustainable resource use and evaluating current practices in relation to resource usage.

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE OCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** DA/OS/PM/BC/07/4/A

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Prevention and control measures may include but are not limited to: | * Eliminate the hazard * Isolate the hazard * Substitute the hazard with a safer alternative * Use administrative controls to reduce the risk * Use engineering controls to reduce the risk * Use personal protective equipment * Safety, Health and Work Environment Evaluation * Periodic and/or special medical examinations of workers |
| 1. Safety gears /PPE (Personal Protective Equipment’s) may include but are not limited to: | * Arm/Hand guard, gloves * Eye protection (goggles, shield) * Hearing protection (ear muffs, ear plugs) * Hair Net/cap/bonnet * Hard hat * Face protection (mask, shield) * Apron/Gown/coverall/jump suit * Anti-static suits * High-visibility reflective vest |
| 1. Incidents and emergencies may include but are not limited to: | * Chemical spills * Equipment/vehicle accidents * Explosion * Fire * Gas leak * Injury to personnel * Structural collapse * Toxic and/or flammable vapors emission. |
| 1. OSH requirements / regulations may include but are not limited to: | * Building code * Permit to Operate |
| 1. OSH-related trainings may include but are not limited to: | * Safety Orientations relevant to tasks * Safe and Correct Operation of Tools and Equipment * Health Orientations/trainings * Prevention and Control of OSH Hazards in the workplace * Chemical Handling * Safety Trainings * Prevention and Control of Work-related Injuries and Illness * Basic First-aid Trainings * Emergency Response Trainings * Trainings on use of fire-extinguisher |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# COMMON UNITS OF COMPETENCY

# CLEAN AND SANITIZE DAIRY EQUIPMENT

**UNIT CODE:** DA/OS /PM/CC/01/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to clean and sanitize dairy equipment. It involves preparing to clean and sanitize dairy equipment, cleaning and sanitizing dairy equipment and completion of cleaning and sanitization of dairy equipment.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active voice) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to clean and sanitize dairy equipment | 1. A ***safe working environment*** is established for preparation of cleaning and sanitization materials in accordance to manufacturer’s instructions and occupational health and safety procedures 2. Cleaning and sanitation materials are identified and prepared in accordance to ***milk processing manual*** and GMP. 3. Cleaning and sanitation tools and equipment are identified in accordance to milk processing manual and GMP. 4. The proper cleaning and sanitization procedures are identified and selected in accordance to milk processing manual and GMP. |
| 1. Clean and sanitize dairy equipment | 1. A safe working environment is established during cleaning and sanitization in accordance to manufacturer’s instructions and occupational health and safety procedures. 2. ***Tools and equipment*** are cleaned and sanitized in accordance with their specific cleaning ***Standard Operating Procedures (SOPs)***, milk processing manual and GMP 3. ***Cleaning waste*** are disposed in accordance with the SOPs, environment protection and management regulations and GMP |
| 1. Complete cleaning and sanitization of dairy equipment | 1. Cleaning and sanitization ***efficiency is verified*** in accordance to the SOP 2. Cleaning and sanitization is documented according to SOP 3. Cleaning and sanitization are reported according to the organizational policy |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Safe working environment may include but are not limited to: | * + EHS manual   + Public health Act * Factory and other work places Act |
| 1. Milk processing manual may include but are not limited to: | * A guide on milk and milk products processing procedures by; * IFAD(SDCP) * FAO   + USAID |
| 1. Tools and equipment may include but are not limited to: | * Tools * Manual handling tools * Analytical instruments * Utensils * Equipment   + Tanks   + Heat exchanger   + Separator   + Churns * Tubing and valves |
| 1. Standard Operating Procedures (SOPs) may include but are not limited to: | * Inspection SOPs * Documentation SOP * Cleaning and sanitization solutions preparation SOPs * Cleaning SOPs * Sanitization SOPs * Waste management SOP * Validation testing SOPs |
| 1. Cleaning waste may include but are not limited to: | * May include but is not limited to: * Milk residues * Used cleaning agents * Used sanitation agents * Packaging material |
| 1. Efficiency is verified may include but are not limited to: | * May include but are not limited to: * Microbiological swabbing * ATP-metry * Visual inspection * Analysis of the residual chemicals |

**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:

* Cleaning
* Sanitation
* Record keeping
* Milk processing Equipment and tools handling.
* Chemical handling
* Ability to assemble and disassemble dairy processing equipment
* Ability to work according to OHS standards
* Good physical endurance
* Handling of tools and chemical reagents
* Manual Dexterity
* Perception skills (olfactory and visual)
* Prepare cleaning solutions

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Basic logistics
* Common tools used for cleaning and sanitization
* Determination of reagents strength
* Different detergents used in dairy process cleaning
* Environment impact of detergents
* Principles of cleaning and sanitization applied to the dairy industry
* Principles of Cleaning in Place (CIP)
* Risks of handling chemicals reagents on personal safety
* Water use and conservation

**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. Established safe working procedures during preparation and use of cleaning and sanitization materials correctly 2. Identified and prepared cleaning and sanitation materials correctly. 3. Identified cleaning and sanitation tools and equipment correctly 4. Identified and selected proper cleaning and sanitization procedures correctly. 5. Cleaned and sanitized milk processing tools and equipment properly 6. Disposed of cleaning waste and rinsing water appropriately 7. Efficiency of cleaning and sanitization is verified in correctly. 8. Filled the documentation correctly. |
| 1. Resource Implications | The following resources must be provided:   1. Functional dairy plant 2. Personal protection equipment |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation/Demonstration with oral questioning 2. Third party report 3. Written tests |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. During industrial attachment.   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

# COLLECT RAW MILK

**UNIT CODE:** DA/OS /PM/CR/01/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to collect raw milk. It involves collecting, quality and quantity assessment, preserving and storing raw milk. It also includes record keeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

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| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active voice) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to collect raw milk | 1. The ***collection routes*** are selected based ongeographical locations, accessibility and efficiency of collection and organizational policy 2. ***Collection tools, equipment and materials*** are identified and assembled according to the **SOP** and GMP 3. Collection tools, equipment and materials are prepared according to the SOP and GMP 4. Collection routes is communicated to the clients and the production team according to the organizational policy |
| 1. Collect and preserve raw milk | 1. Raw milk is sampled according to the SOP and ***sampling procedure*** 2. ***Raw milk tests*** are carried out as per test procedure and GMP. 3. Raw milk is collected in accordance with the *GMP*and the established collection routes 4. Raw milk transported in accordance with the *GMP*and the established collection routes 5. Raw milk is weighed and recorded according to the SOP and GMP. 6. Raw milk is chilled and stored according to the SOP and GMP. 7. Monitored raw milk in storage according to the required ***chilling parameters.*** |
| 1. Complete raw milk collection | 1. ***Quality gaps*** in the supply chain are identified based on raw milk tests results 2. Advices are provided to the milk producer based on raw milk tests and organization policy. 3. Records raw milk collectionis documented based on organization policy 4. Collection, chilling and testing equipment are cleaned in accordance withappropriate equipment manual and GMP. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Collection routes may include but are not limited to: | * Suppliers geographical identification * Transport modes identification * Collection plan * Distances and durations of the trips * Raw milk quantities |
| 1. Collection tools, equipment and materials may include but are not limited to: | * Thermometer * Portable scale * ICT device * Lactometer * Alcohol gun * Milk can and containers * Chilling equipment * Rapid test kits |
| 1. Standard Operating Procedures (SOPs) may include but are not limited to: | * Collection SOP * Transportation SOP * Sampling SOP * Testing SOP * Chilling and storage SOP * Cleaning SOP |
| 1. Sampling procedure may include but are not limited to: | * Random * Systematic * Composite |
| 1. Raw milk tests may include but are not limited to: | * Organoleptic test * Alcohol test * Lactometer test * Peroxide test |
| 1. Chilling parameters. | * Temperature * Acidity of raw milk. * Organoleptic test |

**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:

* Hygiene milk handling
* Communication
* Milk testing
* Weighing
* Sampling
* Chilling machine operations
* Data analysis and collection
* Handling of tools and equipment
* Perception skills (olfactory and visual)

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Basic logistics
* Basic principles of quality assurance tests
* Basic quality assurance of raw milk
* Dairy Chemistry
* Dairy microbiology
* Dairy processing utilities (Refrigeration)
* Data collection techniques
* Statutory requirements for raw milk
* Good Manufacturing Practices (GMP)
* Sampling techniques.

**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 assembled collection tools, equipment and materials correctly. 2. Prepared collection tools, equipment and materials correctly 3. Communicated collection routes to the clients and the production team appropriately. 4. Selected collection routes correctly 5. Sampled raw milk correctly. 6. Tested raw milk correctly. 7. Collected raw milk of required quality. 8. Transported raw milk appropriately. 9. Weighed and recorded quantity of raw milk correctly. 10. Chilled and stored raw milk to correct temperature 11. Raw milk chilling parameters monitored correctly. 12. Identifiedquality gaps in the supply chain correctly 13. Milk producer advised on milk quality appropriately 14. Documented raw milk collection correctly 15. Cleaned chilling and testing equipment and apparatus appropriately. |
| 1. Resource Implications | The following resources must be provided:   1. Functional milk cooling plant. |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation/Demonstration with oral questioning 2. Third party report 3. Written exam |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. During industrial attachment.   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. |

# PROCESS PASTEURIZED MILK

**UNIT CODE:** DA/OS /PM/CR/02/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to process pasteurized milk. It involves operating fluid milk processing equipment, packaging and storing pasteurized milk, cleaning processing equipment, carrying out waste management and record keeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active voice) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to process pasteurized milk | 1. Required***materials***are identified and assembled as per organization policy and GMP. 2. Requiredmaterial*s* are prepared as per organization policy and GMP. 3. ***Milk processing equipment*** are identified and assembled as per organization policy and GMP. 4. Milk processing equipment prepared as per organization policy and GMP. 5. A ***safe working environment*** is provided for milk processing operations |
| 1. Process pasteurized milk | 1. Cream separator is set and operated according to SOP and GMP 2. Milk homogenizer is set and operated according to SOP and GMP 3. ***Heat exchanger*** is set and operated according to SOP and GMP 4. Pasteurized milk is packaged as per milk processing manual and GMP 5. Pasteurized milk is stored according to SOP and GMP |
| 1. Complete processing of pasteurized milk | 1. Processing equipment are cleaned according to the milk processing manual and GMP 2. Pasteurization process is documented in accordance to organization policy. 3. Dairy waste is segregated and disposed with due regard to ***environment protection and management regulations*** and GMP |

**RANGE**

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

|  |  |  |
| --- | --- | --- |
| **Variable** | | **Range** |
| 1. Materials may include but are not limited to: | * Raw milk * Packaging materials | |
| 1. Milk processing equipment may include but are not limited to: | * Cream separator * Homogenizer * Heat exchangers * Heating system equipment | |
| 1. Safe working environment may include but are not limited to: | * EHS manual * Public health Act * Factory and other places of work Act | |
| 1. Heat exchanger may include but are not limited to: | * Plate heat exchanger * Tubular heat exchanger * Double jacketed vat * Scraped surface heat exchanger | |
| 1. Standard Operating Procedures (SOP)s may include but are not limited to: | * Milk storage SOP * Documentation SOP * Equipment operation SOP | |
| 1. Environment protection and management regulations may include but are 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:

* Measuring
* Communication
* Assembly and operation of milk processing equipment
* Handling of tools and equipment
* Perception skills (olfactory and visual)

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Basic logistics
* Concepts of fluid milk unit operations
* Dairy Chemistry
* Dairy Identity Standards in Kenyan markets
* Dairy Microbiology
* Dairy processing utilities (Basic engineering, Steam generation and Refrigeration)
* Data collection techniques
* Environmental impact of milk processing
* Equipment start-up, shutdown, and emergency procedures
* Principles and application of dairy tools and instruments
* Principles of operation of milk processing equipment
* Cleaning of processing equipment
* 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. Identified and assembled materials for processing of pasteurized milk correctly.   2. Prepared materials for processing of pasteurized milk correctly.   3. Identified and assembled equipment for processing of pasteurized milk correctly.   4. Prepared equipment for processing of pasteurized milk correctly.   5. Set and operated cream separator correctly.   6. Set and operated milk homogenizer correctly.   7. Set and operatedheat exchanger correctly.   8. Produced pasteurized milk of required quality.   9. Packaged pasteurized milk into appropriate packaging materials.   10. Stored pasteurized milk in correct storage temperature   11. Collected and documented data related to processing of pasteurized milk correctly.   12. Cleaned milk processing equipment correctly.   13. Managed pasteurized milk processing wastes correctly   14. Documented pasteurization process correctly. |
| 1. Resource Implications | The following resources must be provided:   1. Functional dairy plant. 2. Personal protection equipment |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation/Demonstration with oral questioning 2. Third party report 3. Written test |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. During industrial attachment.   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. |

# PRODUCED FERMENTED MILK PRODUCTS

**UNIT CODE:** DA/OS /PM/CR/03/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce fermented milk products. It involves preparing milk and other ingredients, processing and packaging fermented milk product, cleaning of processing equipment and carrying out waste management. It also includes record keeping.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active voice) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to produce fermented milk products | 1. ***Materials*** needed are identified and assembled in accordance with the type of ***fermented milk product*** and GMP. 2. Materials needed are prepared in accordance with the type of fermented milk product, ***SOPs*** and GMP. 3. ***Tools and equipment*** needed are identified and assembled in accordance with the type of fermented milk product to process and GMP. 4. Tools and equipment needed are prepared according to the type of fermented milk product to process and GMP. |
| 1. Produce fermented milk products | * 1. Fermented milk products are produced based on type offermented product in accordance with the milk processing manualand GMP   2. Fermented milk products are packaged as per milk processing manual and GMP   2.3 Fermented milk products are stored in accordance with the milk processing manual and GMP |
| 1. Complete production of fermented milk products | 1. Processing equipment are cleaned according to the milk processing manual and GMP 2. Dairy waste is segregated and disposed with due regard to environment protection and management regulations and GMP 3. Fermented milk products processing is documented as per organization policy |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Materials may include but are not limited to: | * Starter culture * Food additives * Fruit preparations * Raw milk * Sweeteners * Packaging materials |
| 1. Fermented milk products may include but are not limited to: | * Yogurt * Lala |
| 1. Standard Operating Procedures (SOP)s may include but are not limited to: | * + Pre-operational SOPs   + Documentation SOP   + Equipment operation SOP * Materials preparation SOPs |
| 1. Tools and equipment may include but are not limited to: | **Tools**   * ICT * Utensils * Manual handling tools * pH-meter * Thermometer   **Equipment**   * Tanks * Heat exchanger * Tubes & valves |

**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:

* Assembly and operation of dairy processing equipment
* Communication
* Handling of tools and equipment
* Perception skills (olfactory and visual)
* Measuring

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Dairy microbiology
* Dairy chemistry
* Fermented milk products technology
* Cleaning of processing equipment
* 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. Identified and assembled materials for processing of fermented milk products correctly.   2. Prepared materials for processing of fermented milk products correctly   3. Assembled equipment for processing of fermented milk products correctly.   4. Prepared equipment for processing of fermented milk products correctly.   5. Produced fermented milk products of required quality   6. Packaged fermented milk products in appropriate packaging materials.   7. Stored fermented milk products in appropriate storage temperature.   8. Cleaned processing and testing equipment and apparatus appropriately.   9. Managed processing wastes correctly.   10. Documented fermented milk products processing correctly. |
| 1. Resource Implications | The following resources must be provided:   1. Functional dairy plant. |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation/Demonstration with oral questioning 2. Third party report 3. Written exam |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. During industrial attachment.   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. |

# CONTROL QUALITY OF MILK AND MILK PRODUCTS

**UNIT CODE:** DA/OS /PM/CR/04/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to control the quality of milk and milk products. It involves preparing tests materials and equipment, sampling; testing and analysing tests results. It also entails cleaning quality control equipment, apparatus and facilities, managing laboratory waste, documenting and reporting quality control.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active voice) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to control quality of milk and milk products. | 1. A ***safe working environment*** is provided for the preparation of test materials and equipment 2. ***Sample***d ***item*** is received or taken, and stored in accordance with the ***SOP*** and ***quality manual*** 3. The quality tests to be carried out are selected according to the test and quality manual 4. Test ***materials and equipment*** are identified and assembled according to the ***analyses to be carried out*** and quality manual 5. Test materials and equipment are prepared in accordance with the SOPs and quality manual |
| 1. Control quality of milk and milk products | 1. Quality of sampled item is tested in accordance with quality manual 2. Results of quality tests are analyzed and interpreted in accordance withquality manual |
| 1. Complete quality control of milk and milk products | 1. Quality control equipment, apparatus and facilities are cleaned according to the quality manual and GMP 2. Quality control equipment, apparatus and facilities are maintained according to operator’s manuals 3. Laboratory waste is segregated and disposed with due regard to environment protection and management regulations and GMP 4. Quality control reports are written and documented as per organization policy 5. Quality control reports are disseminated to relevant authorities as per organization policy |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Safe Working Environment may include but are not limited to: | * EHS manual * Public Health Act * Factory and other work places Act |
| 1. Sampled item may include but are not limited to: | * Raw milk * Pasteurized milk * Fermented milk product * Packaging material * Non-dairy ingredients * Products samples from the market * Surface swabs * Air samples * Water samples |
| 1. Standard Operating Procedures (SOP)s may include but are not limited to: | * Sampling SOPs * Analytical testing SOPs * Documentation SOP |
| 1. Quality manual may include but are not limited to: | * Company’s quality policy * Quality system policies/requirements * Continuous improvement process plan * Analyses required for every sampled product * Laboratory management * Products specifications |
| 1. Materials and equipment may include but are not limited to: | * Materials * Test reagents * SOP manual * Equipment * Aflatoxin Kit * Alcohol gun * Water bath * Lactometer * Infra-red analyzer * Automatic milk analyzer * Titration equipment * Gerber butyrometer * Adulteration test kits |
| 1. Analyses to be carried out may include but are not limited to: | * Organoleptic test * Lactometer test * Titratable acidity * Geber Fat test * Phosphates test * Alcohol test * Automatic milk analysis test * Standard plating & colony enumeration * Resazurin test |

**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:

* Assembly and operation of quality control equipment
* Measuring
* Reagent preparation
* Milk testing
* Computation
* Communication
* Data collection
* Handling of chemical substances
* Handling of tools and instruments

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Good Manufacturing Practices (GMP)
* Common types of contamination of
  + Dairy products
  + Environment
  + Non-dairy foodstuff
* Basic principles of quality assurance tests
* Dairy chemistry
* Dairy microbiology
* Safe work procedures
* Sampling techniques
* Standards for Dairy products
* 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. Established safe working procedures during preparation and use of laboratory materials. 2. Took and stored sampled item appropriately. 3. Identified quality tests correctly. 4. Identified and assembled test materials and equipment correctly. 5. Assembled and prepared test materials and equipment correctly. 6. Obtained the sample correctly. 7. Assessed the sampled item correctly 8. Analyzed and interpreted test results correctly. 9. Analyzed and interpreted test results correctly. 10. Cleaned milk testing equipment, apparatus and facilities appropriately 11. Managed laboratory wastes correctly. |
| 1. Resource Implications | The following resources must be provided:   1. Functional dairy laboratory. |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation/Demonstration with oral questioning 2. Third party report 3. Written exam |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. During industrial attachment.   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. |

# PACKAGE MILK PRODUCTS

**UNIT CODE:** DA/OS /PM/CR/05/4/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to package milk products. It involves preparing packaging lines, operating packaging equipment, sampling and assessing packaged product and documenting packaging process.

**ELEMENTS AND PERFORMANCE CRITERIA**

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| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active voice) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare the packaging line | 1. The ***packaging materials*** are selected according to the product to be packaged 2. ***Packaging line*** is prepared in accordance with ***SOPs*** andGMP |
| 1. Operate the packaging line | 1. Packaging line is operated according to its SOP 2. ***Packaging process*** is monitored according to SOP, organization policy and GMP. 3. Packaged milk products are stored according to SOP and GMP |
| 1. Complete packaging of milk products | 1. Packaging line is cleaned according to the milk processing manual and GMP 2. Packaging wastes are segregated and disposed with due regard to environment protection and management regulations and GMP 3. Packaging process is documented in accordance with the SOP |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Packaging materials may include but are not limited to: | * Laminate * Plastic pouch * Plastic cup * Plastic bottles * Cartons * Glue |
| 1. Packaging line may include but are not limited to: | * Form fill and seal machine * Cup filler * Tetra pack * Carton former * Carton sealer * Shrink wrapper * Palletizer |
| 1. Standard Operating Procedures (SOP)s may include but are not limited to: | * Pre-operational SOP * Line assembly SOP * Operational SOP * Documentation SOP * Sampling SOP |
| 1. Packaging process may include but are not limited to: | * Pre- packaging preparations * Line pace * Sealing temperature * Filling volume * Position of the production information   + Lot number   + Manufacture date   + Expiration date |

**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:

* Assembly of packaging line
* Operation of packaging line.
* Handling of packaging tools and machine
* Perception skills (olfactory, tactile and visual)

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Aseptic packing conditions
* Basic analytical techniques
* Equipment start-up, shutdown, and emergency procedures
* Packaging Environmental impact and waste disposal
* Types of packaging equipment
* Various packaging materials

**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. Selected packaging materials appropriate. 2. Prepared packaging line correctly. 3. Operated packaging line correctly. 4. Monitored packaging process correctly. 5. Stored packaged milk products at correct storage temperature. 6. Cleaned packaging line correctly. 7. Segregated and disposed packaging wastes appropriately. 8. Documented packaging process correctly. |
| 1. Resource Implications | The following resources must be provided:   1. Functional dairy plant |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation/Demonstration with oral questioning 2. Third party report 3. Written exam |
| 1. Context of Assessment | Competency may be assessed:   * 1. On the job   2. Off the job   3. During industrial attachment.   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. |