REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

DAIRY PLANT MANAGER

LEVEL 5

TVET CDACC
P.O. BOX 15745-00100
NAIROBI

First published 2019
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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 to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training . A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Dairy Plant Management Level 5. 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 the Agriculture 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 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with 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 these Occupational Standards and incorporated Food Safety. These occupational standards will be the bases for development of competency-based curriculum for Dairy Plant Management Level 5. These Standards will also be the bases for assessment of an individual for competence certification.

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

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

Prof. CHARLES M. M. ONDIEKI, PhD, FIET (K), Con. Eng. Tech.
CHAIRMAN, 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 and Food Safety 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 Occupational Standards. 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.
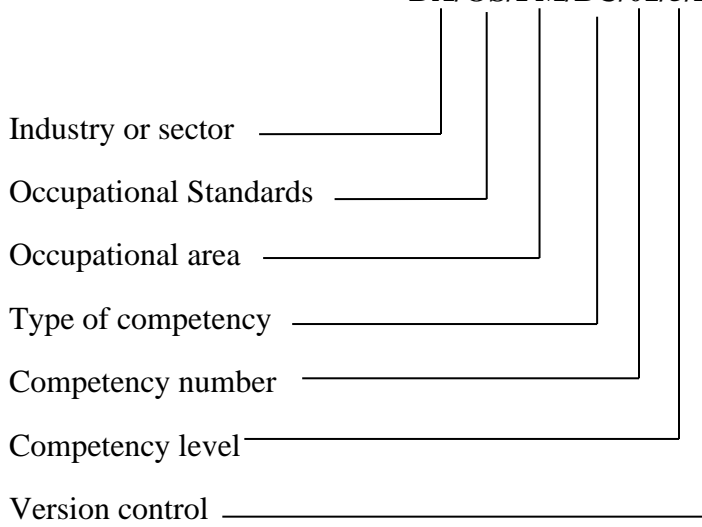
CHAIRMAN
DAIRY SECTOR SKILLS ADVISORY COMMITTEE

ACRONYMS

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 Program 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/01/5/B

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

OVERVIEW

Dairy Plant Management level 5 qualification consists of competencies that an individual must achieve to supervise processing activities in a dairy plant. It entails the procurement of raw milk and chilling raw milk; processing fluid milk, fermented milk products, fat-based milk products and concentrated milk products and producing cheese.

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. Process concentrated milk products
6. Process fat-based milk products
7. Produce cheese

BASIC UNITS OF COMPETENCY

DEMONSTRATE COMMUNICATION SKILLS

UNIT CODE: DA/OS/PM/BC/01/5/B

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range*
1. Meet communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met 1.2 Different approaches are used to meet communication needs of clients and colleagues 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization
2. Contribute to the development of communication strategies	2.1 Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as required 2.2 Channels of communication are established and reviewed regularly 2.3 Coaching ineffective communication is provided 2.4 Work related network and relationship are maintained as necessary 2.5 Negotiation and conflict resolution strategies are used where required 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives
3. Conduct interviews	3.1 A range of appropriate communication strategies are employed in *interview situations* 3.2 Records of interviews are made and maintained in accordance with organizational procedures

	3.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated
4. Facilitate group discussions	4.1 Mechanisms which enhance effective group interaction is defined and implemented
	4.2 Strategies which encourage all group members to participate are used routinely
	4.3 Objectives and agenda for meetings and discussions are routinely set and followed
	4.4 Relevant information is provided to group to facilitate outcomes
	4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties
	4.6 Specific communication needs of individuals are identified and addressed
5. Represent the organization	5.1 When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization
	5.2 Presentation is clear and sequential and delivered within a predetermined time
	5.3 Utilize appropriate media to enhance presentation
	5.4 Differences in views are respected
	5.5 Written communication is consistent with organizational standards
	5.6 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 non-judgmental way	
	• Using active listening	
	• Making decision about appropriate words, behavior	
	• Putting together response which is culturally appropriate	
	• Expressing an individual perspective	
	• Expressing own philosophy, ideology and background and exploring impact with relevance to communication	
	• Openness and flexibility in communication	
• Situations include but not limited to:	• Establishing rapport	
	• Eliciting facts and information	
	• Facilitating resolution of issues	
	• Developing action plans	
	• Diffusing potentially difficult situations	

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit of competency.

Required Skills
The individual needs to demonstrate the following skills:
- Effective communication process
- Active listening
- Giving/receiving feedback
- Interpretation of information
- Role boundaries setting
- Negotiation
- Establishing empathy
- Openness and flexibility in communication
- Communication skills required to fulfil job roles as specified by the organization

Required Knowledge
The individual needs to demonstrate knowledge of:
- Communication process
- Dynamics of groups and different styles of group leadership
- Communication skills relevant to client groups

- Flexibility in communication
- Communication skills relevant to client groups

EVIDENCE GUIDE

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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Met communication needs of clients and colleagues 1.2 Contributed to the development of communication strategies 1.3 Conducted interviews 1.4 Facilitated group discussions 1.5 Represented the organization
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct Observation/Demonstration with Oral Questioning 3.2 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 NUMERACY SKILLS

UNIT CODE: DA/OS/PM/BC/02/5/B

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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. Calculate with whole numbers and familiar fractions, decimals and percentages for work	1.1 Mathematical information that may be partly embedded in routine workplace tasks and texts is selected and interpreted 1.2 Whole numbers and routine or familiar fractions, decimals and percentages including familiar rates are interpreted and comprehended 1.3 Calculations which may involve a number of steps are perform 1.4 Calculations done with whole numbers and routine or familiar fractions, decimals and percentages 1.5 Conversion between equivalent forms of fractions, decimals and percentages is done 1.6 Order of operations is applied to solve multi-step calculations 1.7 Problem solving strategies are appropriately applied 1.8 Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task 1.9 Formal and informal mathematical language and symbolism are used to communicate the result of the task

2. Estimate, measure, and calculate with routine metric measurements for work	2.1 Measurement information in workplace tasks and texts are selected and interpreted in accordance with workplace requirements 2.2 Appropriate routine measuring equipment are identified and selected in accordance with workplace requirements 2.3 Measurements are estimated and made using correct units 2.4 Estimations and calculations done using routine measurements 2.5 Conversions performed between routinely used metric units 2.6 Problem solving processes are used to undertake the tasks 2.7 Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task 2.8 Information is recorded using mathematical language and symbols appropriate to discuss the task
3. Use routine maps and plans for work	3.1 Features are identified in routine maps and plans 3.2 Symbols and keys in routine maps and plans are clearly explained 3.3 Orientation of map to North is identified and interpreted 3.4 Understanding of direction and location is clearly demonstrated 3.5 Simple scale is applied to estimate length of objects, or distance to location or object 3.6 Directions are given and received using both formal and informal language
4. Interpret, draw and construct 2D and 3D shapes for work	4.1 Two dimensional shapes and routine three dimensional shapes identified in everyday objects and in different orientations 4.2 The use and application of shapes elaborately explained 4.3 Formal and informal mathematical language and symbols used to describe and compare the features of two dimensional shapes and routine three dimensional shapes 4.4 Common angles identified 4.5 Common angles in everyday objects are appropriately estimated

		4.6 Formal and informal mathematical language are used to describe and compare common angles
		4.7 Common geometric instruments used to draw two dimensional shapes
		4.8 Routine three dimensional objects constructed from given nets
5.	Interpret routine tables, graphs and charts for work	5.1 Routine tables, graphs and charts identified in predominately familiar texts and contexts
		5.2 common types of graphs and their different uses identified
		5.3 features of tables, graphs and charts identified
		5.4 Information in routine tables, graphs and charts located and interpreted
		5.5 Calculations are perform to interpret information
		5.6 How statistics can inform and persuade interpretations is explained
		5.7 misleading statistical information is identified
		5.8 Information relevant to the workplace is discussed
6.	Collect data and construct routine tables and graphs for work	6.1 Features of common tables and graphs identified
		6.2 Uses of *different tables and graphs* identified
		6.3 Data and variables to be collected are determined
		6.4 The audience is determined
		6.5 Method of data collection is select
		6.6 Data is collected
		6.7 Information is collated in a table
		6.8 Suitable scale and axes determined
		6.9 Graph to present information is drafted and drawn
		6.10 Data checked to ensure that it meets the expected results and context
		6.11 Information is reported or discussed using formal and informal mathematical language
7.	Use basic functions of calculator	*7.1* Keys are identified and used for *basic functions on a calculator*
		7.2 Calculation done using whole numbers, money and routine decimals and percentages
		7.3 Calculation done with routine fractions and percentages
		7.4 Order of operations is applied to solve multi-step calculations
		7.5 Results are interpreted, displayed and recorded

	7.6 Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task
	7.7 Formal and informal mathematical language and appropriate symbolism and conventions used to communicate the result of the task

RANGE

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

Variable	Range
• Simple fractions, decimals and percentages	May include but not limited to: 1.1 Fraction 1.2 Decimals 1.3 Percentages
• Common 2D shapes and common 3D shapes	May include but not limited to: 2.1 Round 2.2 Square 2.3 Rectangular 2.4 Triangle 2.5 Sphere 2.6 Cylinder 2.7 Cube 2.8 Polygons 2.9 Cuboids
• Symbols and keys in routine maps and plans	May include but not limited to: 3.1 Charts 3.2 Maps 3.3 Graphs
• Use basic functions of calculator	May include but not limited to: • Addition • Multiplication • Calculate ratios • Conversion of ratios into percentages

• Routine tables, graphs and charts for work	May include but not limited to: • Bar Graphs • Flow Charts • Pie Charts • Pictograph • Line Graphs • Time Series Graphs • Stem and Leaf Plot • Histogram • Dot Plot • Scatter plot

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

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

Required knowledge

The individual needs to demonstrate knowledge of:

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

EVIDENCE GUIDE

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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Calculated correctly with whole numbers and routine or familiar fractions, decimals and percentages 1.2 Estimated, measured and calculated with routine metric measurements 1.3 Applied simple scale to estimate length of objects or distance to location or object 1.4 Used formal and informal mathematical language to describe and compare common angles 1.5 Used common geometric instruments to draw two dimensional shapes 1.6 Collected data and constructed routine tables and graphs 1.7 Used basic functions of calculator correctly
2. Resource Implications	2.1 Calculator 2.2 Basic measuring instruments
3. Methods of Assessment	Competency may be assessed through: 3.1 Written Test 3.2 Interview/Oral Questioning 3.3 Demonstration
4. Context of Assessment	Competency may be assessed in an off the job setting
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE DIGITAL LITERACY

UNIT CODE:DA/OS/PM/BC/03/5/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 computers for purposes of communication, work performance and management at the work place.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function	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	1.1 Concepts of ICT are determined in accordance with computer equipment 1.2 Classifications of computers are determined in accordance with manufacturers specification 1.3 *Appropriate computer software* is identified according to manufacturer's specification 1.4 *Appropriate computer hardware* is identified according to manufacturer's specification 1.5 Functions and commands of operating system are determined in accordance with manufacturer's specification
2. Apply security measures to data, hardware, software in automated environment	2.1 *Data security and privacy are classified* in accordance with the prevailing technology 2.2 *Security threats* are identified, **and** *control measures* are applied in accordance with laws governing protection of ICT 2.3 Computer threats and crimes are detected. 2.4 Protection against computer crimes is undertaken in accordance with laws governing protection of ICT

3. Apply computer software in solving tasks	3.1 **Word processing concepts** are applied in resolving workplace tasks, report writing and documentation
	3.2 **Word processing utilities** are applied in accordance with workplace procedures
	3.3 Worksheet layout is prepared in accordance with work procedures
	3.4 Worksheet is built and data manipulated in the worksheet in accordance with workplace procedures
	3.5 Continuous data manipulated on worksheet is undertaken in accordance with work requirements
	3.6 Database design and manipulation is undertaken in accordance with office procedures
	3.7 Data sorting, indexing, storage, retrieval and security is provided in accordance with workplace procedures
4. Apply internet and email in communication at workplace	4.1 Electronic mail addresses are opened and applied in workplace communication in accordance with office policy
	4.2 Office internet functions are defined and executed in accordance with office procedures
	4.3 **Network configuration** is determined in accordance with office operations procedures
	4.4 Official World Wide Web is installed and managed according to workplace procedures
5. Apply desktop publishing in official assignments	5.1 Desktop publishing functions and tools are identified in accordance with manufactures specifications
	5.2 Desktop publishing tools are developed in accordance with work requirements
	5.3 Desktop publishing tools are applied in accordance with workplace requirements
	5.4 Typeset work is enhanced in accordance with workplace standards
6. Prepare presentation packages	6.1 Types of presentation packages are identified in accordance with office requirements
	6.2 Slides are created and formulated in accordance with workplace procedures
	6.3 Slides are edited and run in accordance with work procedures
	6.4 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:
	1.1 Identified and controlled security threats
	1.2 Detected and protected computer crimes
	1.3 Applied word processing in office tasks
	1.4 Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures
	1.5 Opened electronic mail for office communication as per workplace procedure
	1.6 Installed internet and World Wide Web for office tasks in accordance with office procedures
	1.7 Integrated emerging issues in computer ICT applications
	1.8 Applied laws governing protection of ICT
2. Resource Implications	2.1 Tablets
	2.2 Laptops
	2.3 Desktop computers
	2.4 Calculators
	2.5 Internet
	2.6 Smart phones
	2.7 Operation Manuals
3. Methods of Assessment	Competency may be assessed through:
	3.1 Written Test
	3.2 Demonstration
	3.3 Practical assignment
	3.4 Interview/Oral Questioning
	3.5 Demonstration
4. Context of Assessment	Competency may be assessed in an off and on the job setting

5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE ENTREPRENEURIAL SKILLS

UNIT CODE : DA/OS/PM/BC/04/5/B

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function	These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Develop business Innovative strategies	1.1 Business innovation strategies are determined in accordance with the organization strategies 1.2 Business innovative strategies are implemented for the purpose of business growth 1.3 Track record and normative capability profile of enterprise and similar businesses are reviewed and considered in setting ***strategic directions***. 1.4 Strengths, weaknesses, opportunities and threats are considered when developing new ideas, approaches, goals and directions 1.5 Decisions about enterprise strategies/directions are made after careful consideration of all relevant information 1.6 ***Business/corporate plan*** is developed that sets out tactics, resource implications, timeframes, production and sales target
2. Develop new products/ markets	2.1 Alternative product/service offerings are canvassed and studied for feasibility 2.2 Potential and new sources/sellers of supplies and raw materials are identified and canvassed.

		2.3 Target markets and buyers are identified and surveyed as to their preferences and brand loyalties.
3.	Expand customers and product lines	3.1 Enterprise is built up and sustained through responsiveness to market demands and the regulatory environment. 3.2 Competitive advantage of existing products and services is maintained/enhanced through responsive advocacies and strategies. 3.3 Constant listening to stakeholder/client feedback is ensured to maintain loyal client base.
4.	Motivate staff/workers	4.1 Regular dialogue is established and maintained in all levels and relevant sections of the enterprise 4.2 Flow of communications in both directions is encouraged 4.3 Helpful mechanisms and benefits are implemented 4.4 Issues/problems are proactively resolved through win-win solutions wherever practicable
5.	Expand employed capital base	5.1 Capital employed in business is continuously reviewed as per the strategic plan 5.2 Business share holdings are reviewed in accordance with the type of business 5.3 Capital employed is expanded according to organization procedures 5.3 Types of shares are determined according to strategic plan 5.4 Shares diversification process is undertaken as per office procedures 5.5 Role of shareholders is determined and implemented in accordance organization procedures
6.	Undertake county/ regional business expansion	6.1 Regions for expansion are continuously reviewed in accordance with strategic plan and company's expansion plan 6.2 County business regulations are reviewed and adhered to in accordance with set procedures 6.3 Regional laws and regulations are adhered to in accordance with set procedures 6.4 County/regional business expansion is undertaken in accordance with organization's growth/ expansion plan

RANGE

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

Variable	Range
• Strategic directions include but not limited to:	• Business continuity and succession • Resource access security • Core competencies development • New developments e.g. technological change, new products
• Business/Corporate plan include but not limited to:	• Action steps and responsibilities of departments and individual workers • Resource requirements and budget • Tactics and strategies to achieve objectives
• Helpful mechanisms include but not limited to:	• Wage and non-wage benefits • Employee awards and recognition systems • Employee rights and welfare policies • Full-disclosure/transparency policies

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:
- Assessing a range of alternative products and strategies
- Critically analyzing information, summarizing and making sense of previous and current market trends
- Identifying changing consumer preferences and demographics
- Thinking "outside the box"
- Ensuring quality consistency
- Reducing lead time to product/service delivery

- Managing operations/ production
- Using formal problem-solving procedures, e. g., root-cause analysis, six sigmas
- Communication skills
- Applying motivational principles, e. g., positive stroking, behavior modification
- Assessing range of alternatives rather than choosing the easiest option
- Achieving ownership and credibility for the enterprise vision
- Critically analyzing information, summarizing and making sense of previous and current market trends
- Developing solutions and practical strategies which are "outside the box"

Required Knowledge

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

EVIDENCE GUIDE

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

3.1 1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Demonstrated ability to maintain a profitable and stable enterprise as shown by stakeholder feedback, employee testimonies and company financial statements 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3 Demonstrated ability to manage/operate a micro/small-scale business 1.4 Demonstrated basic marketing skills
2. Resource Implications	The following resources should be provided: 2.1 Interview guide for entrepreneurs 2.2 Enterprise workers and third parties 2.3 Materials and location relevant to the proposed activity and tasks
3. Methods of Assessment	3.1 Case problems 3.2 Interview 3.3 Portfolio 3.4 Third part reports
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group
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/05/5/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 small teams, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and workplace ethics.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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	1.1 Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 1.2 Emotions are managed as per workplace requirements 1.3 Individual performance is evaluated and monitored according to the agreed targets. 1.4 Assertiveness is developed and maintained based on the requirements of the job. 1.5 Accountability and responsibility for own actions are demonstrated. 1.6 Self-esteem and a positive self-image are developed and maintained. 1.7 Time management, attendance and punctuality are observed as per the organization policy. 1.8 Goals are managed as per the organization's objective 1.9 Self-strengths and weaknesses are identified as per *personal objectives* 1.10 Critics are managed as per personal objectives
2. Demonstrate interpersonal communication	2.1 Listening and understanding is demonstrated as per communication policy 2.2 Writing to the needs of the audience is demonstrated as per communication policy

	2.3 Speaking, reading and writing is demonstrated as per communication policy
	2.4 Empathising is demonstrated as per the communication policy
	2.5 Internal and external customers' needs are identified and interpreted as per the communication policy
	2.6 Persuasion is demonstrated as per the communication policy
	2.7 Communication networks are established as per the SOPs
	2.8 Information is shared as per communication structure
3. Demonstrate critical safe work habits	3.1 Stress is managed in accordance with workplace procedures.
	3.2 Punctuality and time consciousness is demonstrated in line with workplace policy.
	3.3 Personal objectives are integrated with organization goals based on organization's strategic plan.
	3.4 Work priorities are set in accordance to workplace procedures.
	3.5 Leisure time is recognized in line with organization policy.
	3.6 Abstinence from *drug and substance abuse* is observed as per workplace policy.
	3.7 Awareness of HIV and AIDS is demonstrated in line with workplace requirements.
	3.8 Safety consciousness is demonstrated in the workplace based on organization safety policy.
	3.9 *Emerging issues* are dealt with in accordance with organization policy.
4. Lead small teams	4.1 Performance expectations for the *team* are set as per the organization objectives
	4.2 Tasks are assigned in accordance with the organization policy.
	4.3 Team performance indicators are identified according to set rules and regulations.
	4.4 *Forms of communication* in a team are established according to office policy.
	4.5 Communication is carried out as per workplace place policy and requirements of the job.
	4.6 *Feedback* on performance is collected and analyzed based on established team learning process

		4.7 *Gender mainstreaming* is undertaken in accordance with set regulations.
5.	Plan and organize work	5.1 Task requirements are identified as per the workplace objectives
		5.2 Task is interpreted in accordance with safety (OHS), environmental requirements and quality requirements
		5.3 Work activity is organized with other involved personnel as per the SOPs
		5.4 Resources are mobilized, allocated and utilized to meet project goals and deliverables.
		5.5 Work activities are monitored and evaluated in line with organization procedures.
		5.6 Job planning is documented in accordance with workplace requirements.
		5.7 Time is managed achieve workplace set goals and objectives.
6.	Maintain professional growth and development	6.1 Personal training needs are identified and assessed in line with the requirements of the job.
		6.2 *Training and career opportunities* are identified and availed based on job requirements.
		6.3 Licensees and certifications relevant to job and career are obtained and renewed.
		6.4 *Personal growth* is pursued towards improving the qualifications set for the profession.
		6.5 Work priorities are identified based on requirement of the job and workplace policy.
		6.6 Recognitions are sought as proof of career advancement in line with professional requirements.
7.	Demonstrate workplace learning	7.1 Own learning is managed as per workplace policy.
		7.2 Learning opportunities are sought and allocated based on job requirement and in line with organization policy.
		7.3 Contribution to the learning community at the workplace is carried out.
		7.4 *Range of media for learning* are identified as per the training need
		7.5 Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job
		7.6 Enthusiasm for ongoing learning is demonstrated
		7.7 Time and effort is invested in learning new skills-based job requirements

	7.8 Willingness to learn in different context is demonstrated based on available learning opportunities arising in the workplace.
	7.9 Opportunities for performance improvement are identified proactively in area of work.
	7.10 Awareness of personal role in workplace *innovation* is demonstrated.
8. Demonstrate problem solving skills	8.1 Problems are identified as per the context of data and circumstances
	8.2 Problem solutions are sought based on the problem
	8.3 Independence and initiative in identifying and solving problems is demonstrated.
	8.4 Team problems are solved as per the workplace guidelines
	8.5 Problem solving strategies are applied as per the workplace guidelines
9. Demonstrate workplace ethics	9.1 Policies and guidelines are observed as per the workplace requirements
	9.2 Self-worth and profession is exercised in line with personal goals and organizational policies
	9.3 Code of conduct is observed as per the workplace requirements
	9.4 Personal and professional integrity is demonstrated as per the personal goals
	9.5 Commitment to jurisdictional laws is demonstrated as per the workplace requirements

RANGE

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

Range	Variable
• Drug and substance abuse include but not limited to:	Commonly abused • Alcohol • Tobacco • Miraa • Over-the-counter drugs • Cocaine • Bhang

	• Glue
• Feedback includes but not limited to:	• Verbal • Written • Informal • Formal
• 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
	   o Technical
	   o Supervisory
	   o Managerial
	   o Continuing Education

	• Serving as Resource Persons in conferences and workshops	

• Resource include but not limited to:	• Human
	• Financial
	• Technology
	    o Hardware
	    o 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: 1.1 Conducted self-management 1.2 Demonstrated interpersonal communication 1.3 Demonstrated critical safe work habits 1.4 Led small teams 1.5 Planned and organized work 1.6 Maintained professional growth and development 1.7 Demonstrated workplace learning 1.8 Demonstrated problem solving skills 1.9 Demonstrated workplace ethics
2. Resource Implications	The following resources should be provided: 2.1 Case studies/scenarios
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Oral Interview 3.2 Observation 3.3 Third Party Reports 3.4 Written
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group
5. 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/06/5/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.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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 always according to environmental regulations and OSHS. 1.3 *PPE* is used according to OSHS.
2. Control environmental Pollution control	2.1 Environmental pollution *control measures* are compiled following standard protocol. 2.2 Procedures for solid waste management are observed according to Environmental Management and Coordination Act 1999 2.3 Methods for minimizing *noise pollution* complied following environmental regulations.
3. Demonstrate sustainable resource use	3.1 Methods for minimizing wastage are complied with. 3.2 Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle) 3.3 Methods for economizing or reducing resource consumption are practiced.
4. Evaluate current practices in relation to resource usage	4.1 Information on resource efficiency *systems and procedures* are collected and provided to the work group where appropriate.

		4.2 Current resource usage is measured and recorded by members of the work group.
		4.3 Current purchasing strategies are analyzed and recorded according to industry procedures.
		4.4 Current work processes to access information and data is analyzed following enterprise protocol.
5.	Identify Environmental legislations/conventions for environmental concerns	5.1 Environmental *legislations/conventions* and local ordinances are identified according to the different *environmental aspects/impact*
		5.2 *Industrial standard/environmental practices* are described according to the different environmental concerns
6.	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 guidelines
		6.4 Stakeholders are consulted based on company guidelines
7.	Monitor activities on Environmental protection/Programs	7.1 Activities are periodically monitored and evaluated according to the objectives of the environmental Program
		7.2 Feedback from stakeholders are gathered and considered in proposing enhancements to the program based on consultations
		7.3 Data gathered are analyzed based on evaluation requirements
		7.4 Recommendations are submitted based on the findings
		7.5 Management support systems are set/established to sustain and enhance the program
		7.6 Environmental incidents are monitored and reported to concerned/proper authorities

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 • Safety boots
• 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
• 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

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
- Adjusting 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
- Solid Waste Act
- Methods of minimizing wastage
- Waste management procedures
- Economizing of resource consumption
- 3Rs principle
- 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:
	1.1 Controlled environmental hazard
	1.2 Controlled environmental pollution
	1.3 Demonstrated sustainable resource use
	1.4 Evaluated current practices in relation to resource usage
	1.5 Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues /concerns.
	1.6 Described industrial standard environmental practices according to the different environmental issues/concerns.
	1.7 Resolved problems/ constraints encountered based on management standard procedures
	1.8 Implemented and monitored environmental practices on a periodic basis as per company guidelines
	1.9 Recommended solutions for the improvement of the program
	1.10 Monitored and reported to proper authorities any environmental incidents
2. Resource Implications	The following resources should be provided:
	2.1 Workplace with storage facilities
	2.2 Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.)
	2.3 PPE
	2.4 Manuals and references
	2.5 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection

		2.6 Case studies/scenarios relating to environmental Protection
3	Methods of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration 3.2 Oral questioning 3.3 Written examination 3.4 Interview/Third Party Reports 3.5 Portfolio (citations/Bwards from GOs and NGOs, certificate of training – local and abroad) 3.6 Simulations and role-plays
4	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.
5	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/07/5/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	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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 identified 1.2 ***Evaluation and/or work environment*** measurements of OSH hazards/risk existing in the workplace is conducted by Authorized personnel or agency 1.3 ***OSH issues and/or concerns*** raised by workers are Gathered
2. 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 implemented 2.2 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.
3. Implement OSH programs, procedures and policies/ guidelines	3.1 Information to work team about company OSH program, procedures and policies/guidelines are provided 3.2 Implementation of OSH procedures and policies/ guidelines are participated

| | 3.3 Team members are trained and advised on OSH standards and procedures |
| | 3.4 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, vapors Ergonomics Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles Physiological factors – monotony, personal relationship, work out cycle Safety hazards (unsafe workplace condition) – confined space, excavations, falling objects, gas leaks, electrical, poor storage of materials and waste, spillage, waste and debris Unsafe workers' act (Smoking in off-limited areas, Substance and alcohol abuse at work)
• 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'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
• 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 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:
	1.1 Identifies hazards/risks in the workplace and/or its indicators
	1.2 Requests for evaluation and/or work environment measurements of OSH hazards/risk in the workplace
	1.3 Gathers OSH issues and/or concerns raised by workers
	1.4 Identifies and implements prevention and control measures, including use of PPE (personal protective equipment) for specific hazards
	1.5 Recommends appropriate risk controls based on result of OSH hazard evaluation and OSH issues gathered
	1.6 Establish contingency measures, including emergency procedures in accordance with organization procedures
	1.7 Provides information to work team about company OSH program, procedures and policies/guidelines
	1.8 Participates in the implementation of OSH procedures and policies/guidelines
	1.9 Trains and advises team members on OSH standards and procedures

	1.10 Implements procedures for maintaining OSH-related records

2. Resource Implications	The following resources should be provided:
	 Workplace or assessment location
	     2.1 OSH personal records
	     2.2 PPE
	     2.3 Health records

3. Methods of Assessment	Competency may be assessed through:
	     3.1 Portfolio Assessment
	     3.2 Interview
	     3.3 Case Study/Situation
	     3.4 Observation/Demonstration and oral questioning

4. 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.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

CORE UNITS OF COMPETENCY

PROCURE RAW MILK

UNIT CODE: DA/OS/PM/CR/01/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to supervise the procurement of raw milk. It involves identifying raw milk sources, applying food safety measures in raw milk quality and quantity assessment, transportation and record keeping.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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. Carry out food safety risk assessment to procure raw milk	1.1 Raw milk sources are identified based on production levels, ***consistency*** and geographical locations ***and risk assessment plan*** 1.2 Hazard identification is carried out based on ***hazard type (s)*** and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk management plan is communicated as per policies for internal and external communication
2. Prepare to procure raw milk	2.1 Raw milk sources are selected based on production levels, ***consistency*** and geographical locations ***and risk assessment plan*** 2.2 Terms of raw milk procurement are negotiated according to guidelines by ***regulatory authorities*** 2.3 Milk collection routes are designed based on geographical locations, accessibility and efficiency of collection 2.4 Means of transport are identified and allocated to routes and points 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 2.5 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

		2.6 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
3. Procure raw milk		3.1 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 3.2 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 3.3 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
4. Evaluate raw milk procurement		4.1 A sample of raw milk is collected as per sampling methods, GMP and Good Laboratory Practice (GLP) 4.2 Quality and safety of raw milk is evaluated in accordance with the *milk processing manual* 4.3 Quantity of collected milk is assessed based on projected production. 4.4 Detected faults are reported and rectified in accordance with milk processing manual and work place procedures
5. Complete raw milk procurement		4.1 Raw milk procurement process is documented based on work place procedures and Dairy Industry Act (Cap 336) and risk assessment plan 4.2 Report on raw milk procurement process is prepared and disseminated to relevant authority as per workplace 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

Regulatory authorities 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)
hazard type (s) 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 • Hair • Fur • Feed • Fodder • Animal waste
Risk assessment plan includes but not limited to:	• Risk identification • Risk analysis • Risk evaluation • Risk control/treatment • Risk communication
Work place procedures include but not limited to	Guidelines on; • Human resource development

	• Record keeping • Environment safety • Resource allocation • Procurement policy • Labour laws/regulations
Milk processing manual	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:

- Negotiation
- Communication
- Food safety risk assessment and communication
- Training skills
- Trouble-shooting
- Basic analytical skills
- Food handling skills
- Milk sampling
- Milk equipment handling
- Reagent preparation
- Documentation and record keeping

Required knowledge

The individual needs to demonstrate knowledge of:

- Milk production patterns
- Labour requirements
- Production economics
- Distance approximation
- Milk quality tests
- Good Manufacturing Practices (GMP)
- Basic Laboratory Practices

- Milk sampling
- Hazard Analysis Critical Control Point (HACCP) process
- Code of hygienic practice
- Regulatory and Statutory requirements in the dairy industry
- Documentation and 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: 1.1 Carried out food safety risk assessment to procure milk 1.2 Sourced adequate amount of raw milk at competitive prices 1.3 Procured raw milk of desired quality and safety 1.4 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures 1.5 Documented and maintained raw milk procurement and food safety records
2. Resource Implications	The following resources must be provided: 2.1 Assessment location 2.2 Personal Protective Equipment and Apparel
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Oral questioning 3.4 Third party report 3.5 Practical report
4. 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.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.

CHILL RAW MILK

UNIT CODE: DA/OS/PM/CR/02/5/B

UNIT DESCRIPTION
This unit specifies the competencies required to supervise chilling of raw milk. It involves applying food safety measures in raw milk quality and quantity assessment; bulking and cooling; equipment cleaning and record keeping.

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. Carry out food safety risk assessment to chill raw milk	1.1 ***Materials and equipment*** for raw milk testing and chilling are identified in accordance with the ***milk processing manual*** and the code of hygienic practice for milk and milk products 1.2 Hazard identification is carried out based on ***hazard type (s)*** and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk management plan is communicated as per policies for internal and external communication
2. Prepare to chill raw milk	2.1 ***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 2.2 A sample of raw milk is obtained periodically as per ***sampling methods*** and good manufacturing practices (GMP) and Good Laboratory Practice (GLP) 2.3 Raw milk quality and safety is assessed in accordance with the milk processing manual 2.4 Results of quality and safety tests are analysed and interpreted in accordance with milk processing manual and the standard for raw milk 2.5 Tested milk is weighed, recorded and ***bulked*** as per work place procedures , public health Act and the code of hygienic practice for milk and milk products

	2.6 Labour for chilling raw milk is identified and allocated based on job requirements and public health Act	
3. Chill raw milk	3.1 ***Cooling parameters*** are set as per the milk processing manual and the code of hygienic practice for milk and milk products 3.2 Cooling process is run as per operator's manual and code of hygienic practice for milk and milk products 3.3 ***Critical chilling temperature*** is attained in accordance with milk processing manual	
4. Evaluate raw milk chilling	4.1 Cooling process is monitored as per operator's manual and GMP 4.2 A sample of chilled milk is collected as per sampling methods, GLP and GMP 4.3 Chilled milk quality and safety is assessed in accordance with the milk processing Manual 4.4 Test results of chilled milk are analysed and interpreted in accordance with milk processing manual and the standard for raw milk 4.5 Detected faults are reported and rectified in accordance with milk processing manual and work place procedures	
5. Complete raw milk chilling	5.1 Chilling and testing equipment are cleaned in accordance with milk processing manual, GMP and the code of hygienic practice for milk and milk products 5.2 Chilled milk records are documented based on work place procedures and the code of hygienic practice for milk and milk products 5.3 Chilled milk reports are written and 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
Materials and equipment include but not limited to	Materials • Raw milk • Testing reagents

	Equipment • Testing apparatus • Bulking containers • Chilling tanks
Milk processing manual	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
hazard type (s) 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 • Hair • Fur • Feed • Fodder • Animal waste
Bulked includes but not limited to	Pooling milk into: • Tanks • Containers • Vats • Silos

Cooling parameters include but not limited to:	• Temperature • Temperature maintenance • Time • Agitation
Work place procedures include but not limited to	Guidelines on; • Human resource development • Record keeping • Environment safety • Resource allocation • Procurement policy • Labour laws/regulations
Sampling procedures includes but not limited to	• Random sampling • Systematic sampling • Composite sampling
Critical chilling temperature	Acceptable temperature range for chilling milk

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

Required knowledge

The individual needs to demonstrate knowledge of:

- Milk quality tests
- Dairy microbiology
- Dairy chemistry
- Cooling methods and operations
- Hazard Analysis Critical Control Point (HACCP) process

- Milk chemistry
- Code of hygienic practice (s)
- Regulatory and Statutory requirements in the dairy industry
- Sampling techniques
- Good manufacturing practices
- Good Laboratory Practices (GLP)
- Cleaning methods
- Documentation and 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:
	1.1 Carried out food safety risk assessment to chill raw milk
	1.2 Assessed quality and safety of milk before chilling
	1.3 Chilled milk to critical temperature
	1.4 Cleaned chilling and testing equipment and apparatus
	1.5 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures
	1.6 Documented and maintained raw milk chilling and food safety records
2. Resource Implications	The following resources must be provided:
	2.1 Assessment location
	2.2 Personal Protective Equipment and Apparel
3. Methods of Assessment	Competency may be assessed through:
	3.1 Observation
	3.2 Written tests
	3.3 Oral questioning
	3.4 Third party report
	3.5 Practical report
4. 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.
5. 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/03/5/B

UNIT DESCRIPTION
This unit specifies the competencies required to supervise processing of fluid milk. It involves applying food safety measures in raw milk quality assessment, processing, packaging and quality assessment of fluid milk products, cleaning of processing equipment, waste management and record keeping.

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. Carry out food safety risk assessment to process fluid milk products	1.1 *Fluid milk products* to produce are determined based on market demand and profitability 1.2 Hazard identification is carried out based on *hazard type (s)* and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk management plan is communicated as per policies for internal and external communication
2. Prepare process fluid milk products	2.1 Volume of fluid milk product to produce is determined as per market demand and profitability 2.2 *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 2.3 A sample of raw material is obtained as per *sampling methods,* GLP and GMP 2.4 Quality and safety testing of raw material is carried out in accordance with the *milk processing manual* 2.5 Results of quality and safety tests are analysed and interpreted in accordance with milk processing manual and the standard for raw milk 2.6 Labour for processing fluid milk products is identified and allocated based on job requirements, public health Act and the code of hygienic practice for milk and milk products

3.	Process fluid milk products	3.1 Standardized milk is obtained in accordance with milk processing manual and good manufacturing practices (GMP)
		3.2 Fluid milk products are processed and process controls monitored based on type of product in accordance with the milk processing manual, the code of hygienic practice for milk and milk products, public health Act , GMP, and the food safety risk assessment
		3.3 Fluid milk products are packaged as per milk processing manual, public health Act, GMP and the code of hygienic practice for milk and milk products
		3.4 Fluid 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
4.	Evaluate fluid milk products processing	4.1 A sample of fluid milk product is obtained as per sampling procedures and GMP
		4.2 Fluid milk product quality and safety is assessed in accordance with the milk processing manual
		4.3 Results of fluid milk product quality and safety tests are analysed and interpreted in accordance with the respective product (s) standards and milk processing manual
		4.4 Detected faults are reported and rectified or disposed of in accordance with milk processing manual and work place procedures
5.	Complete fluid milk products processing	5.1 Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products
		5.2 *Cleaning and sanitizing programmes* are documented as per the code of hygienic practice for milk and milk products and the cleaning and sanitizing manual
		5.3 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
		5.4 Fluid milk products processing is documented as per *work place policy* and the code of hygienic practice for milk and milk products
		5.5 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
Fluid milk products includes but not limited to	• Fresh milk • Extended shelf life • Ultra Heat Treated (UHT)
Materials and equipment include but not limited to	Materials • Raw milk • Flavours • Packaging materials Equipment • Cream separator • Homogenizer • Heat exchangers
Sampling methods include but not limited to	• Random sampling • Systematic sampling • Composite sampling
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
Hazard type (s) 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 • Fur • Feed • Fodder • Animal waste
Process controls include but not limited to:	• Time and temperature combination • Flow diversion valve • Clarification • Homogenization • Bactofugation
Environment protection and management regulations includes but not limited to	• Environmental Management and Coordination Act • Public Health Act

Cleaning and sanitizing programmes include but not limited to:	• Cleaning agents
	    o Concentration
	    o Time
	    o Temperature
	    o Pressure
	• Frequency of cleaning
	• Cleaning efficiency
	• Cleaning checklist
	• Cleaning records

Work place policy 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
- Food safety risk assessment and communication
- Training skills
- Trouble-shooting
- Milk sampling
- Food handling skills
- Reagent preparation
- Computation
- Communication
- Record keeping and documentation

Required knowledge

The individual needs to demonstrate knowledge of:

- Dairy microbiology
- Dairy chemistry
- Milk quality tests
- Milk Sampling
- Fluid milk products technologies
- Hazard Analysis Critical Control Point (HACCP) process
- Codes of hygienic practice
- Regulatory and Statutory requirements in the dairy industry
- Operations management
- Judging and grading of fluid milk products
- Cleaning of processing equipments
- Dairy waste and management
- Good manufacturing practices (GMP)
- Good Laboratory Practices (GLP)
- 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: 1.1 Carried out food safety risk assessment to process fluid milk products 1.2 Assembled correct equipment and materials for processing of fluid milk products 1.3 Processed fluid milk products 1.4 Assessed quality and safety of fluid milk products 1.5 Stored fluid milk products in appropriate packaging materials and conditions 1.6 Cleaned milk processing, testing equipment and apparatus 1.7 Managed processing wastes 1.8 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures 1.9 Document and maintained fluid milk processing and food safety records
2.	Resource Implications	The following resources must be provided: 2.1 Assessment location / work place 2.2 Personal Protective Equipment and Apparel
3.	Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Product analysis 3.4 Oral questioning 3.5 Third party report 3.6 Practical report
4.	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.
5.	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/04/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to supervise the processing of fermented milk products. It involves applying food safety measures in raw milk quality assessment, processing, packaging and quality assessment of fermented milk products, cleaning of processing equipment, waste management and record keeping.

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. Carry out food safety risk assessment to process fermented milk products	1.1 *Fermented milk products* to produce are determined based on market demand and profitability 1.2 Hazard identification is carried out based on *hazard type (s)* and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk management plan is communicated as per policies for internal and external communication
2. Prepare to process fermented milk products	2.1 Volume of fermented milk product to produce is determined as per market demand and profitability 2.2 *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) 2.3 A sample of raw material is obtained as per *sampling methods,* Good Laboratory Practices (GLP) and GMP 2.4 Raw material quality and safety is assessed in accordance with the *milk processing manual* and the respective product (s) standards 2.5 Results of quality and safety tests are analysed and interpreted in accordance with milk processing manual and the respective product (s) standards

		2.6 Labour for processing fermented milk products is identified and allocated based on job requirements, public health Act and the code of hygienic practice for milk and milk products
3.	Process fermented milk products	3.1 Standardized milk is obtained in accordance with milk processing manual and good manufacturing practices (GMP) and the standard for pasteurized milk 3.2 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 3.3 Fermented milk products are packaged as per milk processing manual, public health Act, GMP and the code of hygienic practice for milk and milk products 3.4 Fermented 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
4.	Evaluate fermented milk products processing	4.1 A sample of fermented milk product is obtained as per sampling procedures, GLP and GMP 4.2 Fermented milk product quality and safety is assessed in accordance with the milk processing manual 4.3 Results of fermented milk product quality and safety tests are analysed and interpreted in accordance with milk processing manual 4.4 Detected faults are reported and rectified or disposed of in accordance with milk processing manual and work place procedures and the code of hygienic practice for milk and milk products
5.	Complete fermented milk products processing	5.1 Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products 5.2 ***Cleaning and sanitizing programmes*** are documented as per the code of hygiene practice for milk and milk products and the cleaning and sanitizing manual 5.3 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 5.4 Fermented milk products processing is documented as per work place policy and the code of hygienic practice for milk and milk products

	5.5 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
Fermented milk products include but not limited to	• Yoghurt • Cultured buttermilk • Probiotics milk • Fermented (Cultured) milk
Materials and equipment include but not limited to	Materials • Raw milk • Flavours and colours • Packaging materials Equipment • Cream separator • Homogenizer • Heat exchangers
Sampling procedures includes but not limited to	• Random sampling • Systematic sampling • Composite sampling
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
hazard type (s) 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
	• Hair
	• Fur
	• Feed
	• Fodder
	• Animal waste
Process controls include but not limited to:	• Time and temperature combination • Flow diversion valve • Clarification • Homogenization • Bactofugation
Environment protection and management regulations includes but not limited to	• Environmental Management and Coordination Act • Public Health Act

Cleaning and sanitizing programmes include but not limited to:	• Cleaning agents
	    o Concentration
	    o Time
	    o Temperature
	    o Pressure
	• Frequency of cleaning
	• Cleaning efficiency
	• Cleaning checklist
	• Cleaning records

Work place policy 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
- Food safety risk assessment and communication
- Training skills
- Trouble-shooting
- Milk sampling
- Food handling skills
- Reagent preparation
- 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
- Judging and grading of fermented milk products
- Cleaning of processing equipments
- Dairy waste and management
- Good manufacturing practices (GMP)
- Good Laboratory Practices (GLP)
- Hazard Analysis Critical Control Point (HACCP) process
- Codes of hygienic practice
- Regulatory and Statutory requirements in the dairy industry

- Operations 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: 1.1 Carried out food safety risk assessment to process fermented milk products 1.2 Assembled correct equipment and materials for processing of fermented milk products 1.3 Processed fermented milk products 1.4 Assessed quality and safety of fermented milk products 1.5 Stored fermented milk products in appropriate packaging materials and conditions 1.6 Cleaned processing and testing equipment and apparatus 1.7 Managed processing wastes 1.8 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures 1.9 Documented and maintained fermented milk processing and food safety records.
2. Resource Implications	The following resources must be provided: 2.1 Assessment location / work place 2.2 Personal Protective Equipment and Apparel
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Product analysis 3.4 Oral questioning 3.5 Third party report 3.6 Practical report
4. 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.
5. 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/05/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to supervise the processing of concentrated milk products. It involves determining product to produce, applying food safety measures in raw material and equipment assembly, quality assessments, processing, packaging, storage, record keeping, cleaning of plant and equipment and waste management.

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. Carry out food safety risk assessment to process concentrated milk products	1.1 ***Concentrated milk products*** to produce are determined based on market demand and profitability 1.2 Hazard identification is carried out based on ***hazard type (s)*** and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk analysis is communicated as per policies for internal and external communication
2. Prepare to process concentrated milk products	2.1 ***Concentrated milk products*** to produce are determined based on market demand and profitability 2.2 Quantity of concentrated milk product to produce is determined as per market demand and profitability 2.3 ***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) 2.4 A sample of raw material is obtained as per ***sampling methods***, good manufacturing practices (GMP) and Good Laboratory Practices (GLP) 2.5 Raw material quality and safety is assessed in accordance with the ***milk processing manual*** 2.6 Results of quality and safety tests are analysed and interpreted in accordance with milk processing manual and the respective product (s) standards

		2.7 Labour for processing concentrated milk products is identified and allocated based on job requirements, public health Act and the code of hygienic practice for milk and milk products
3.	Process concentrated milk products	3.1 Raw milk is standardized to the required fat content in accordance with milk processing manual, GMP 3.2 Concentrated milk products are processed and process controls monitored based on type of product 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 3.3 Concentrated milk products are packaged as per milk processing manual, public health Act , GMP and the code of hygienic practice for milk and milk products 3.4 Concentrated 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
4.	Evaluate concentrated milk products processing	4.1 A sample of concentrated milk product is obtained as per sampling procedures, GLP and GMP 4.2 Concentrated milk product quality and safety is assessed in accordance with the milk processing manual 4.3 Results of concentrated milk product quality and safety tests are analysed and interpreted in accordance with milk processing manual and the respective product (s) standards 4.4 Efficiency of production is assessed based on expected yield in accordance with milk processing manual 4.5 Detected faults are reported and rectified in accordance with milk processing manual and work place procedures and the code of hygienic practice for milk and milk products
5.	Complete processing of concentrated milk products	5.1 Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products 5.2 Cleaning and sanitizing programmes are documented as per the code of hygienic practice for milk and milk products 5.3 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 5.4 Concentrated milk products processing is documented as per work place policy and the code of hygienic practice for milk and milk products

	5.5 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
Concentrated milk products include but not limited to	• Sweetened condensed milk • Evaporated milk / unsweetened condensed milk • Dried skim milk • Dried whole milk • Whey powder
Materials and equipment 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
Sampling procedures includes but not limited to	• Random sampling • Systematic sampling • Composite sampling
hazard type (s) include but not limited to:	Chemical • Pesticides • Veterinary drugs • Herbicides • Fungicides • Paint • Preservatives • Detergents • Disinfectants • Mycotoxins • Heavy

	Biological • Bacteria • Viruses • Fungi • Protozoa • Somatic cells Physical hazards • Broken metal • Broken glass • Wires • Sticks • Insects • Hair • Fur • Feed • Fodder • Animal waste
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
Environment protection and management regulations includes but not limited to	• Environmental Management and Coordination Act • Public Health Act
Process controls include but not limited to:	• Time and temperature combination • Flow diversion valve • Clarification • Homogenization • Bactofugation

Cleaning and sanitizing programmes include but not limited to:	• Cleaning agents
	      o Concentration
	      o Time
	      o Temperature
	      o Pressure
	 • Frequency of cleaning
	 • Cleaning efficiency
	 • Cleaning checklist
	 • Cleaning records

Work place policy	Guidelines on;

includes but not limited to	• 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
- Milk sampling
- Food handling skills
- Food safety risk assessment and communication
- Training skills
- Trouble-shooting
- Reagent preparation
- Computation
- Communication
- Record keeping and documentation

Required knowledge

The individual needs to demonstrate knowledge of:

- Milk sampling
- Milk testing
- Cream production
- Heat transfer
- Evaporated and condensed milk technology
- Drying technology
- Hazard Analysis Critical Control Point (HACCP) process
- Codes of hygienic practice
- Regulatory and Statutory requirements in the dairy industry
- Operations management
- Judging and grading of concentrated milk products

- Good manufacturing practices
- Good Laboratory practices (GLP)
- 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: 1.1 Carried out food safety risk assessment to process concentrated milk products 1.2 Assembled correct equipment and materials for processing of concentrated milk products 1.3 Processed concentrated milk products 1.4 Assessed quality and safety of milk and concentrated milk products 1.5 Stored concentrated milk products in appropriate packaging materials and conditions 1.6 Cleaned milk processing, testing equipment and apparatus 1.7 Managed processing wastes as per recommended procedures 1.8 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures 1.9 Documented and maintained concentrated milk products processing and food safety records.
2. Resource Implications	The following resources must be provided: 2.1 Assessment location / work place 2.2 Personal Protective Equipment and Apparel
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Product analysis 3.4 Oral questioning 3.5 Third party report 3.6 Practical report

4. 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.
5. 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/06/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to supervise the processing of fat-based milk products. It involves determining product to produce, applying food safety measures in raw material and equipment assembly; quality assessments, processing, packaging and storage; record keeping, cleaning of plant and equipment and waste management and disposal.

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. Carry out food safety risk assessment to process fat-based milk products	1.1 ***Fat based milk products*** to produce are determined based on market demand and profitability 1.2 Hazard identification is carried out based on ***hazard type (s)*** and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk management plan is communicated as per policies for internal and external communication
2. Prepare to process fat based milk products	2.1 Volume of fat-based milk product to produce is determined as per market demand and profitability 2.2 ***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) 2.3 A sample of raw material is obtained as per ***sampling methods***, GMP and Good Laboratory Practices (GLP) 2.4 Raw material quality and safety is assessed in accordance with the ***milk processing manual*** 2.5 Results of quality and safety tests are analyzed and interpreted in accordance with milk processing manual, public health Act and the respective product (s) standards

	2.6 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
3. Process fat-based milk products	3.1 Cream is obtained from milk in accordance with milk processing manual and public health Act, good manufacturing practices (GMP) 3.2 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 3.3 Fat based milk products are packaged as per milk processing manual, GMP, public health Act and the code of hygienic practice for milk and milk products 3.4 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
4. Evaluate fat based milk products processing	4.1 A sample of fat-based milk product is obtained as per sampling procedures, GLP and GMP 4.2 Fat based milk product quality and safety is assessed in accordance with the milk processing manual and the *respective standard* 4.3 Results of fat-based milk product quality and safety tests are analyzed and interpreted in accordance with milk processing manual the respective product (s) standards 4.4 Efficiency of production is assessed based on expected yield in accordance with milk processing manual 4.5 Detected faults are reported and rectified in accordance with milk processing manual, work place procedures and the code of hygienic practice for milk and milk products
5. Complete fat-based milk products processing	5.1 Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products 5.2 *Cleaning and sanitizing programmes* are documented as per the code of hygienic practice for milk and milk products and the cleaning and sanitizing manual 5.3 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
	5.4 Fat based milk products processing is documented as per work place policy and the code of hygienic practice for milk and milk products
	5.5 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
Fat based milk products includes but not limited to	• Cream • Butter • Anhydrous milk fat / ghee • Ice cream
Materials and equipment 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

Respective standards include but not limited to:	• Test methods • Codes of practice (s) • Product standards
Sampling methods includes but not limited to	• Random sampling • Systematic sampling • Composite sampling
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
hazards type (s) 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
Environment protection and management regulations includes but not limited to	• Environmental Management and Coordination Act • Public Health Act
Process controls include but not limited to:	• Time and temperature combination • Flow diversion valve • Clarification • Homogenization

	• Bactofugation

Cleaning and sanitizing programmes include but not limited to:	• Cleaning agents
	    o Concentration
	    o Time
	    o Temperature
	    o Pressure
	• Frequency of cleaning
	• Cleaning efficiency
	• Cleaning checklist
	• Cleaning records

Work place policy 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
- Milk sampling
- Food handling skills
- Food safety risk assessment and communication
- Training skills
- Trouble-shooting
- Reagent preparation
- Computation
- Communication
- Record keeping and documentstion

Required knowledge

The individual needs to demonstrate knowledge of:

- Milk sampling
- Milk testing
- Cream production
- Butter making technology
- Ghee making technology
- Ice cream technology
- Judging and grading of fat-based milk products
- Good manufacturing practices
- Good Laboratory practices
- Hazard Analysis Critical Control Point (HACCP) process
- Codes of hygienic practice
- Regulatory and Statutory requirements in the dairy industry
- Operations management
- 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: 1.1 Carried out food safety risk assessment to process fat based milk products 1.2 Assembled correct equipment and materials for processing of fat-based milk products 1.3 Processed fat based milk products 1.4 Assessed quality and safety of milk and fat-based milk products 1.5 Stored fat-based milk products in appropriate packaging materials and conditions 1.6 Cleaned processing and testing equipment and apparatus 1.7 Managed processing wastes as per recommended procedures 1.8 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures

		1.9 Documented and maintained fat based milk products processing and food safety records
2.	Resource Implications	The following resources must be provided: 2.1 Assessment location / work place 2.2 Personal Protective Equipment and Apparel
3.	Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Product analysis 3.4 Oral questioning 3.5 Third party report 3.6 Practical report
4.	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.
5.	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/07/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to supervise the production of ripened and unripened cheese. It involves determining type of cheese to produce; applying food safety measures in cheese milk quality assessments and processing; packaging, and storage; record keeping; equipment cleaning and waste management.

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. Carry out food safety risk assessment to produce cheese	1.1 ***Cheese varieties*** to produce are determined based on market demand and profitability 1.2 Hazard identification is carried out based on ***hazard type (s)*** and source (s) 1.3 Identified hazard (s) are analyzed based on their likelihood and consequence (s) 1.4 Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan 1.5 Risk management plan is communicated as per internal and external communication policies
2. Prepare to produce ripened and unripened cheese	2.1 Quantity of cheese variety to produce is determined as per market demand and profitability 2.2 ***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) 2.3 A sample of raw material is obtained as per ***sampling methods,*** Good Laboratory Practices (GLP) and GMP 2.4 Raw material quality and safety is assessed in accordance with the *milk processing manual* 2.5 Results of quality and safety tests are analyzed and interpreted in accordance with milk processing manual and the respective product (s) standards 2.6 Labour for producing cheese varieties is identified and allocated based on job requirements, public health Act

		and the code of hygienic practice for milk and milk products
3.	Produce ripened and un-ripened cheese	3.1 Standardized milk is obtained in accordance with milk processing manual and GMP 3.2 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 3.3 Cheese is packaged as per milk processing manual, public health Act, GMP, the code of hygienic practice for milk and milk products and the respective standards 3.4 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
4.	Evaluate cheese production	4.1 A sample of cheese variety is obtained as per sampling procedures, GLP and GMP 4.2 Cheese ***quality and safety is assessed*** in accordance with the milk processing manual and the respective standards 4.3 Results of cheese quality and safety tests are analysed and interpreted in accordance with milk processing manual and the respective product (s) standards 4.4 Efficiency of production is assessed based on expected yield in accordance with milk processing manual 4.5 Detected faults are reported and rectified in accordance with milk processing manual, work place procedures and the code of hygienic practice for milk and milk products
5.	Complete cheese production	5.1 Processing equipment are cleaned according to the milk processing manual, GMP and the code of hygienic practice for milk and milk products 5.2 ***Cleaning and sanitizing programmes*** are documented as per the code of hygienic practice for milk and milk products and cleaning and sanitizing manual *5.3* 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

| | 5.4 Cheese processing is documented as per **work place policy** and the code of hygienic practice for milk and milk products |
| | 5.5 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
Cheese varieties includes but not limited to	Ripened • Gouda • Cheddar Unripened • Cottage • Mozzarella • Queso Blanco • Cream cheese • Feta • Processed cheese
Materials and equipment include but not limited to	Materials • Raw milk • Milk coagulants • Salts • Flavours Equipment • Cheese vat • Cheese press • Cheese knife • Cheese cloth • Sieve • Stirrer
Process controls include but not limited to:	• Time and temperature combination • Flow diversion valve • Clarification • Homogenization • Bactofugation

Sampling methods includes but not limited to	• Random sampling • Systematic sampling • Composite sampling
Quality and safety is assessed includes but not limited to	• Organoleptic • Chemical • Microbiological
hazards type (s) include but not limited to:	Chemical hazards • 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
Milk processing manual	A guide on milk and milk products processing procedures by; • DTI-IFAD(SDCP) • FAO-DTI • DTI-USAID

Cleaning and sanitizing programmes include but not limited to:	• Cleaning agents
	   o Concentration
	   o Time
	   o Temperature
	   o Pressure
	• Frequency of cleaning
	• Cleaning efficiency

	• Cleaning checklist • Cleaning records
Transformed includes but not limited to	Manipulating curd to obtain desired properties by: • Shaping • Texturing • Pressing • Addition of additives
Work place procedures include but not limited to	Guidelines on; • Human resource development • Record keeping • Environment safety • Resource allocation • Procurement policy • Labour laws/regulations
Environment protection and management regulations 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 testing
- Milk sampling
- Food handling skills
- Food safety risk assessment and communication
- Training skills
- Trouble-shooting
- Communication
- Reagent preparation
- Record keeping and documentation

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
- Regulatory and Statutory requirements in the dairy industry
- 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: 1.1 Carried out food safety risk assessment to produce cheese 1.2 Assembled correct equipment and materials for producing cheese 1.3 Produced cheese varieties 1.4 Assessed quality and safety of milk and cheese varieties 1.5 Stored cheese in appropriate packaging materials and conditions 1.6 Cleaned cheese making and quality testing equipment and apparatus 1.7 Managed cheese production wastes as per recommended procedures

		1.8 Adhered to occupational safety and health procedures as per OS&H Act and work place procedures 1.9 Documented and maintained cheese processing and food safety records
2.	Resource Implications	The following resources must be provided: 2.1 Assessment location / work place 2.2 Personal Protective Equipment and Apparel
3.	Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Product analysis 3.4 Oral questioning 3.5 Third party report 3.6 Practical report
4.	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.
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.