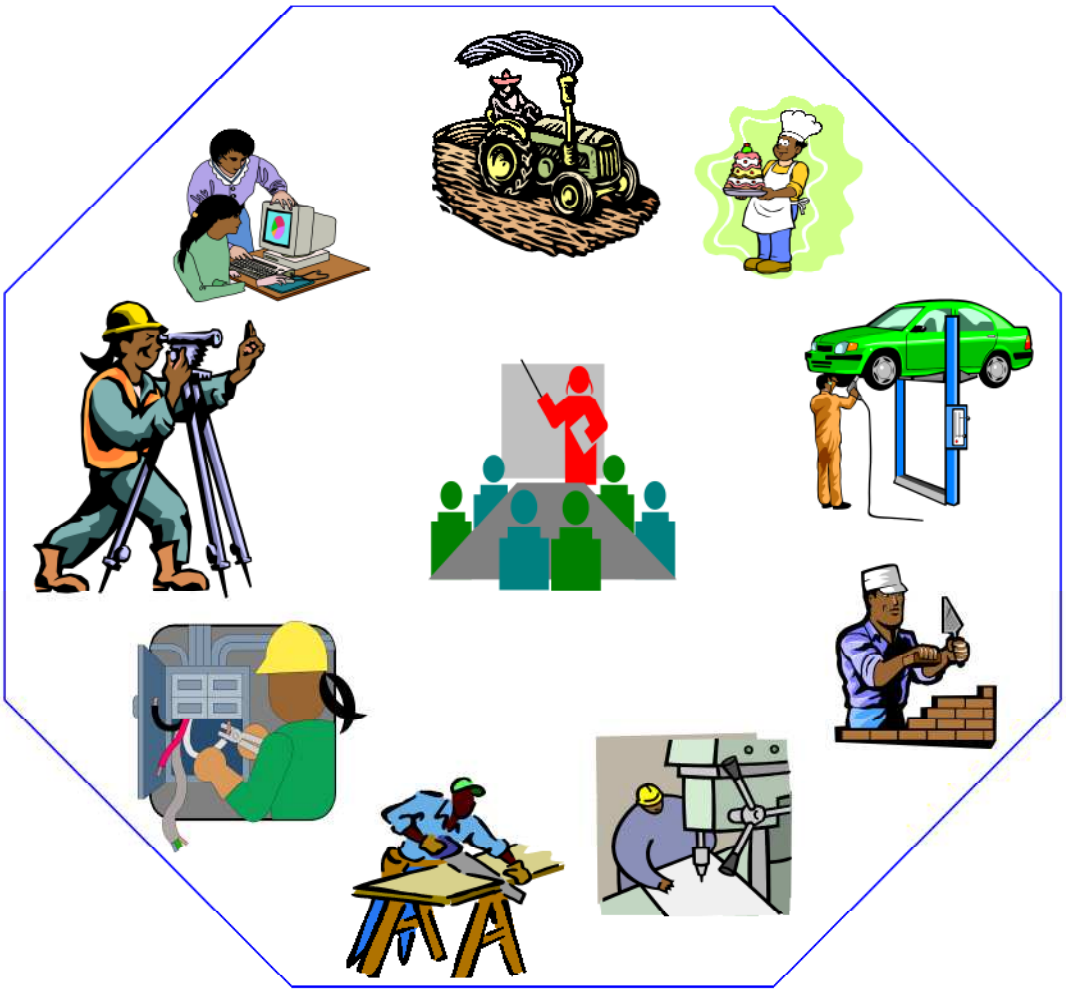
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

AGRO-FOOD PROCESSING MANAGEMENT

NTQF Level V



Ministry of Education
July 2012

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Ago-food Processing Management

Occupational Code: IND FPM

NTQF Level V

IND FPM5 01 0613 Identify, Assess & Control OHS Risk in Own Work	**IND FPM5 02 0613** Develop a HACCP-Based Food Safety Program	**IND FPM5 03 0613** Design and Maintain Programs to Support Legal Compliance
IND FPM5 04 0613 Construct a Process Control Chart for a Food Processing Operation	**IND FPM5 05 0613** Specify & Monitor the Nutritional Value of Processed Foods	**IND FPM5 06 0613** Develop, Manage & Maintain Quality Systems for Food Processing
IND FPM5 07 0613 Apply Food Microbiological Techniques & Analysis	**IND FPM5 08 0613** Identify the Biochemical Properties of Food	**IND FPM5 09 0613** Manage Effective Operation of Enterprise Cold Chain and Refrigeration Systems
IND FPM5 10 0613 Evaluate Sampling Plans in Relation to Food Industry Standards	**IND FPM5 11 0613** Manage Environmental Impacts of Food Processing Operations	**IND FPM5 12 0613** Manage &Evaluate New Product Trials
IND FPM5 13 0613 Manage Operational Plan	**IND FPM5 14 0613** Manage Project Quality	**IND FPM5 15 0613** Facilitate & Capitalize On Innovation & Change
IND FPM5 16 0613 Establish & Build Business Relationship	**IND FPM5 17 0312** Manage Continuous Improvement Process (Kaizen)	

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Identify, Assess and Control OHS Risk in Own Work**
Unit Code	**IND FPM5 01 0613**
Unit Descriptor	This unit of competency specifies the workplace performance required by a technician or specialist in addressing occupational health and safety (OHS) risk, to ensure their own safety, as well as that of others who may be affected by their work.

Elements	Performance criteria
1. Identify hazards and assess risk associated with a product or system of work	1.1. The ***production processes*** of the product or ***system of work*** is ***mapped***. 1.2. ***Hazards*** at each stage of the production processes are identified. 1.3. Hazards are systematically analyzed to identify ***risk*** of injury, illness or damage arising from the hazard. 1.4. Identify factors contributing to the risk are identified 1.5. The product or system of work are assessed and evaluated against requirements of relevant ***OHS legislation***, ***standards, and codes of practice/compliance*** codes or ***guidance material***. 1.6. Potential users of the product or system of work are consulted.
2. Control the risk of a product or system of work	2.1. ***Risk controls*** are developed based on the ***hierarchy of control***. 2.2. Where there is a ***high consequence OHS risk***, ***fail-to-safe*** action is designed into the product or system of work to minimize the impact of possible failure or defect. 2.3. Product or work system development is monitored as it evolves to identify new hazards and to manage any developing risk. 2.4. A ***risk register*** is used to document ***residual risk*** and recommended actions to minimize risk. 2.5. Personal professional limitations are recognized and ***expert advice*** sought as required. 2.6. The risk management process and resultant risk register are communicated to those who may use or interact with the product or system of work. 2.7. Hazard identification, risk assessment and risk control processes are documented and made available to those who may be affected.

3. Identify hazards and assess risks in own work	3.1. ***Sources of OHS information*** are identified and accessed. 3.2. Hazards are identified and eliminated, and residual risk reported according to ***organization procedures***. 3.3. A risk register is used to document residual risk and actions to minimize risk based on the hierarchy of control.
4. Control risk in own work	4.1. Work practices are confirmed as following documented ***work procedures***. 4.2. Work planning and conduct is confirmed as taking account of residual risk register. 4.3. Deficiencies in risk controls are identified, addressed and/or reported according to organization procedures. 4.4. ***OHS records*** are maintained as required. 4.5. Personal professional limitations are recognized and expert advice sought as required.

Variable	**Range**
Production processes	may include: • manufacture, construction and assembly processes • storage • transport • use and operation of equipment • maintenance, servicing, cleaning, adjustment, inspection, repair and modification processes • disposal
System of work	is: • work process • work practice or procedure • the way work is organized, such as: ➢ team and supervision structure ➢ reporting lines ➢ roster ➢ geographical location
Map	includes: • people who may use or interface with the product or system of work • the range of uses of the product or system of work, both intended and unintended • movement or flow of production

Hazards	refer to: • a source or situation with the potential for harm in terms of human injury or ill-health, damage to property, the environment, or a combination of these
Specific safety related hazards	may include but are not limited to: • chemicals • bodily fluids • sharps • noise • manual handling • work posture • underfoot hazards • moving parts of machinery • waste
Other workplace hazards	may include: • occupational violence • stress • fatigue • bullying
Analysis	involves analyzing a hazard to identify: • factors influencing the risk and the range of potential consequences • effectiveness of existing controls • likelihood of each consequence considering exposure and hazard level
Risk	in relation to any hazard, means: • the probability and consequences of injury, illness or damage resulting from exposure to a hazard
OHS legislation	includes: • Commonwealth, state and territory OHS Acts and regulations
Standards	include: • documents produced by national bodies, OHS regulators or industry bodies, that prescribe preventative action to avert occupational deaths, injuries and diseases • standards are of an advisory nature only, except where a law adopts the standard and thus makes it mandatory • standards may be called up as evidence in court or other enforcement action
Codes of practice/compliance	may: • be incorporated into regulations • not relate to a standard • be called up as evidence in court or other enforcement action

Guidance material	May includes: • is an advisory technical document, providing detailed information for use by unions, employers, management, health and safety committee members and representatives, safety officers and others requiring guidance • advises on 'what to do' and 'how to do it' • has no legal standing
Risk controls	include: • The devices and methods to: ➢ where practicable, eliminate the hazard ➢ where this is not practicable, minimize the risk associated with the hazard
Hierarchy of control	is the preferred order of control measures for OHS risks: • elimination (e.g. controlling the hazard at the source) • substitution (e.g. replacing one substance or activity at the source) • engineering control (e.g. installing guards on machinery) • administration control (e.g. policies and procedures for safe work practices) • personal protective equipment (e.g. respirators and ear plugs)
High consequence OHS risk	includes: • high impact events that usually occur rarely, such as explosions, fires and building collapses but may result in very serious injury, death or multiple death situations
Fail-to-safe	includes: • design features of equipment that ensure a failure or defect, or another factor, such as loss of power, resulting in the equipment being left in a safe condition
Risk register	is a document detailing: • a list of hazards, their location and people exposed • a range of possible scenarios or circumstances under which these hazards may cause injury or damage • nature of injury or damage caused • the results of the risk assessment • And may also include: • possible control measures and dates for implementation
Residual risk	is: • the risk which remains after controls have been implemented
Expert advice	may be sought from: • Persons either internal or external to the organization including: ➢ safety professionals

	➢ ergonomists ➢ occupational hygienists ➢ audiologists ➢ safety engineers ➢ toxicologists ➢ occupational health professionals • other persons providing specific technical knowledge or expertise in areas related to OHS including: ➢ risk managers ➢ health professionals ➢ injury management advisors ➢ regulatory bodies ➢ legal practitioners with experience in OHS ➢ engineers (such as design, acoustic, mechanical and civil) ➢ security and emergency response personnel ➢ workplace trainers and assessors ➢ maintenance and tradespersons
Sources of OHS information	include persons, organizations and references where knowledge about OHS may be obtained. These sources may be: • internal, including: ➢ hazard, incident and investigation reports ➢ workplace inspections ➢ incident investigations ➢ minutes of meetings ➢ job safety analyses and risk assessments ➢ organization data such as insurance records, enforcement notices and actions, workers compensation data, OHS performance data ➢ reports and audits ➢ material safety data sheets (MSDS) and registers ➢ employees handbooks ➢ employees including questionnaire results ➢ OHS advisors ➢ manufacturers' manuals and specifications • external, including: ➢ regulatory bodies and OHS Acts regulations, codes and guidance material ➢ other relevant legislation ➢ Office of the Ethiopian Safety and Compensation Council (ASCC) and the former National Occupational Health and Safety Commission (NOHSC) documents ➢ Databases, such as national and state injury data ➢ OHS specialists and consultants ➢ newspapers and journals, trade/industry publications

	➢ internet sites ➢ industry networks and associations, including unions and employer groups ➢ OHS professional bodies ➢ specialist advisors ➢ research information
Organization policies and procedures	include: • policies and procedures underpinning the management of OHS including: ➢ hazard, incident and injury reporting ➢ hazard identification, risk assessment and control ➢ consultation and participation ➢ incident investigation ➢ quality system documentation
Work procedures	include: • standard operating procedures • batch specifications, recipes • operator or manufacturer manuals • procedures for selecting, fitting, using and maintaining personal protective equipment
OHS records	may include: • hazard, incident and investigation reports • workplace inspection reports • first aid records • minutes of meetings • job safety analyses, safe work method statements and risk assessments • MSDS and registers • employees handbooks • plant and equipment operation records including those relevant to registered plant • maintenance and testing reports • training records • environmental monitoring records • health surveillance records

Evidence Guide	
Critical aspects of competence	A candidate must demonstrate the ability to: • be able to provide evidence of: ➢ addressing the OHS risks specific to their technical or specialist workplace role, both in relation to their own health and safety, and to the health and safety of others who may be affected by their work • Evidence gathered by an assessor to determine competence will include:

	➢ written or verbal responses to scenarios and case studies ➢ provision of workplace examples ➢ evidence from workplace supervisor reports ➢ portfolio of workplace documentation ➢ Evidence of workplace performance over time must be obtained to inform a judgment of competence
Underpinning Knowledge	Demonstrate Knowledge of: • the difference between hazard and risk • sources of OHS information both internal and external to the organization • nature of common workplace hazards, such as chemicals, noise, manual handling work postures, underfoot hazards and moving parts of equipment • regulatory requirements relevant to the particular industry/type of work site • requirements for hazard identification and hazard identification processes • principles of risk management including risk analysis • examples of safety benchmarks • the hierarchy of control and its application • principles of 'safe design' processes • legislative requirements for record keeping and reporting • hierarchy of control and its application • personal protective equipment requirements, including selection, use, storage and maintenance • workplace specific information, including: ➢ in depth knowledge of hazards of the particular work environment and how they cause harm ➢ hazard identification procedures relevant to the hazards in their workplace ➢ work procedures • organization procedures related to OHS, including: ➢ hazard, incident and injury reporting ➢ hazard identification, risk assessment and control ➢ consultation and participation ➢ incident investigation • record keeping
Underpinning Skills	Demonstrate skills of*:* • use technical skills to access OHS information • use language and literacy skills to comprehend and interpret OHS legislation, guidance material and benchmarks

	• communicate with potential users of the product or system of work, other technicians/specialists, managers and experts advisers • postulate scenarios and analyze the scenarios to identify hazards and analyses risk • assimilate information from a range of sources • relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Develop a HACCP-based Food Safety Plan**
Unit Code	**IND FPM5 02 0613**
Unit Descriptor	This unit of competency covers the skills and knowledge required to develop a hazard analysis critical control point (HACCP)-based food safety plan and to oversee its implementation and monitoring.

Elements	Performance criteria
1. Describe the product, and scope the food safety plan	1.1. Appropriate product-specific knowledge and expertise available are obtained. 1.2. The segment of the food chain and processes involved are specified. 1.3. The scope of the ***HACCP plan*** is identified and class of hazards specified. 1.4.A full ***description of the product*** is drawn up 1.5. The intended use and client group for the product is identified.
2. Construct a flow diagram of production and confirm its applicability	2.1. All steps in the operation are included from primary production, processing, manufacture and distribution to the consumer. 2.2. Standard symbols and nomenclature are used to describe the processes and steps in the operation as a flow diagram. 2.3. The steps preceding and following a new operation are specified. 2.4. The flow diagram is ***validated*** against the operation at all stages of production.
3. Analyze all potential hazards for each step and consider control measures	3.1. Hazards are identified that can reasonably be expected to occur at each step. 3.2. A hazard analysis is conducted to identify ***hazard***s that can impact on the production of safe food covering. 3.3. Control measures are considered for each hazard.
4. Determine critical control points and the critical limits for each	4.1. A process of decision making is followed to determine critical control points. 4.2. Hazards at each critical control point are checked to ensure a control measure can be put in place.

	4.3. Where control measures aren't available the product or process is modified to allow a control measure at another stage. 4.4. ***Critical limits*** are specified for each critical control point that is either measured or sensory.
5. Establish a monitoring system for each critical control point	5.1Appropriate monitoring methods are established for each critical control point. 5.2. Monitoring methods are designed to indicate the critical limit has been reached or is trending towards it. 5.3. Monitoring frequency ensures that the critical control point is in control. 5.4. Adjustments are made on the basis of the monitoring of critical limits to prevent deviation and hazards occurring.
6. Establish and record corrective actions and verification procedures	6.1. Specific corrective actions are designed to deal with deviations in the critical control point as they occur. 6.2. Procedures for treating or disposing of product are documented for when critical limits are exceeded. 6.3. ***Verification*** procedures are developed. 6.4. Verification is carried out to ensure the ***HACCP system*** is working effectively.
7. Establish documentation and record keeping requirements	7.1. All HACCP procedures are documented. 7.2. Records are maintained including the collection of continuous monitoring data if required. 7.3. Records are accessed to determine that procedures in place are maintaining critical limits at each critical control point. 7.4. HACCP procedures are accessed and reviewed as part of continuous improvement. 7.5. Food safety systems and documentation are designed to meet the requirements of ***auditing standards***.

Variable	**Range**
Scope of the HACCP based plans	depends on workplace requirements and may extend outside the direct area of responsibility of the team participants
Description of the product	A full description of the product may include: • relevant safety information, such as composition, physical/ chemical structure, microcidal/ static treatments (e.g. heat-treatment, freezing, brining or smoking)

	• packaging durability • storage conditions • methods of distribution
Validation	refers to: • the use of objective evidence in order to prove that materials, processes, procedures or equipment used are capable of delivering the intended result
Hazard analysis	may cover: • the likelihood of occurrence and severity of consequence • the qualitative and/or quantitative evaluation of the presence of hazards • the survival or multiplication of microorganisms of concern • the production or persistence of toxins, chemical residues or physical agents in food
Methods used to control hazards	include both support programs and specific hazard control limits or requirements. Typical examples of support programs include: • product recall • cleaning schedules • pest control programs • personal hygiene practices • calibration procedures • related operating procedures
Food safety hazards	include: • microbiological • chemical • physical
Food safety programs	must provide for the systematic monitoring of the controls as well as appropriate corrective action if a hazard is found not to be under control. Records must be kept to demonstrate action in relation to, or in compliance with, the food safety program. A food safety program may be developed as a stand-alone program or may be integrated with the quality program in a workplace
Critical limits	such as: • temperature • time • moisture level • pH • a_w • available chlorine • sensory parameters, such as visual appearance and texture

Verification	refers to: • reviewing all aspects of the food safety program and related records to determine compliance with and adequacy of the food safety program. At a minimum, food safety programs must be verified annually
Operating principles for a HACCP system	A HACCP system should be operated on a food chain where the Codex General Principles of Food Hygiene have been applied, and the appropriate Codex Coles of Practice and legislation is in place
Auditing standards	may include any of the recognized standards applying to the food industry, including: • BRC Global Food Standard • ISO 22000:2005 Food safety management systems - Requirements for any organization in the food chain

Evidence Guide	
Critical aspects of competence	Critical aspects of assessment must include the following: • conduct a hazard analysis • determine the critical control points • establish critical limits • develop a system to monitor control of the critical control points • nominate the corrective action to be taken when monitoring indicates a critical control point is not under control • develop verification procedures to confirm the HACCP system is working effectively • maintain documentation concerning all procedures and records
Underpinning Knowledge	Demonstrate Knowledge of: • the purpose and intent of food safety legislation • purpose and responsibilities for maintaining records as required by legislation and workplace procedures • roles and responsibilities for development and maintenance of the food safety program, including internal and external auditors, and authorized officers • HACCP-based principles and their application to food safety, including techniques for identifying hazards, assessing the likelihood of occurrence, determining acceptable methods of control, monitoring and recording requirements for each control point, identifying corrective action if controls are not met, and developing system review procedures • procedures for establishing the critical limits and monitoring data or processes

	• techniques used to map operations and analyze food safety requirements, such as the preparation of flow charts, hazard analysis charts and tables, and data analysis reports • raw materials, ingredients and finished product composition and characteristics, and related handling and storage requirements • food processing methods used in the workplace or work area and their effect on food safety • sources of technical expertise on food safety requirements • the role of consultation in the development, implementation and ongoing maintenance of the food safety program • documentation and recording requirements to support communication and monitoring of the food safety program, including procedures for maintaining and updating relevant documents, such as operating procedures • main types of food safety hazards/contamination likely to occur given the type of product and processing methods used • conditions required for bacterial food poisoning to occur, such as aw (water activity), pH, composition, time and temperature, as relevant to food handled • acceptable control methods for the hazards identified and required corrective action when control requirements are not met • typical support programs, such as cleaning schedules, pest control, stock rotation, product traceability and personal hygiene, and how they can be used as part of a food safety program • acceptable control methods for the hazards identified and required corrective action when control requirements are not met • validation and verification processes and techniques and responsibilities
Underpinning Skills	Demonstrate skills to: • specify personal roles and responsibilities for the development or review of a food safety program • develop a full description of a product • document the intended end use of a product • document processes and steps to be covered in production • develop a flow chart for a food processing operation • establish critical control points for a process • identify food safety hazards at all stages of production • apply decision making tools

	• establish critical limits for critical control points and methods of monitoring and recording • establish procedures for implementing preventative action • develop monitoring plans for person responsible for each critical control point, and the information to be recorded • communicate corrective action requirements in the event that acceptable limits or requirements of support programs are not met • develop or review documentation relating to the design and maintenance of the food safety program, including process flow diagrams, hazard analysis charts and tables, support program requirements, data analysis reports, corrective action reports and verification reports • develop or review documentation to communicate food safety responsibilities, such as standard operating procedures (SOPs), processing parameters and recording devices (e.g. log sheets) • communicate food safety responsibilities within level of responsibility using techniques and presentation styles appropriate to the audience
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Design and Maintain Programs to Support Legal Compliance**
Unit Code	**IND FPM5 03 0613**
Unit Descriptor	This unit of competency covers the skills and knowledge required to design, review and maintain programs to support policy implementation and regulatory compliance. Programs involve hazard identification, risk assessment and control.

Elements	Performance criteria
1. Establish workplace program and operating requirements	1.1. The ***workplace program*** is made to reflect workplace policy objectives. 1.2. Roles and responsibilities to support implementation are identified, negotiated and agreed. 1.3. Resources required to support implementation are identified and secured.
2.Establish/review consultative arrangements	2.1. Consultative mechanisms are established to encourage input from workplace personnel and their representatives. 2.2. Information on consultation processes is made available, appropriate and accessible. 2.3. Procedures are established to ensure that issues raised are promptly addressed. 2.4. Procedures are established to ensure that the outcomes of consultation are promptly communicated.
3. Develop/review program procedures	3.1. Procedures are outlined for the process for identifying and reporting actual and potential hazards. 3.2. Risk assessment and control measures are documented and take account of the hierarchy of control. 3.3. Corrective action and emergency response procedures are defined. 3.4. Procedures are established to review program adequacy and effectiveness. 3.5. Program implementation is monitored to ensure procedures are followed and effective.
4.Establish/review program information and recording systems	4.1. Information is recorded to meet ***program*** and legislative requirements. 4.2. Record formats and systems are made appropriate and accessible to users.

5.Establish/review development/training arrangements to support program implementation and maintenance	5.1. Roles and ***responsibilities*** of participants involved are identified in implementing the program. 5.2. Mentoring, coaching and training requirements for each role are identified. 5.3. Mentoring, coaching and training support is provided to meet the needs identified.
6. Maintain a workplace program	6.1. Information on program purpose, requirements, roles and responsibilities is provided in formats appropriate to purpose and audience. 6.2. Program procedures are followed and supervisory responsibilities are identified and addressed. 6.3. Workplace program records are analyzed to identify patterns of non-conformance and opportunities for ongoing improvement. 6.4. Hazard identification, risk assessment and control are addressed when planning, designing and reviewing change in the workplace. 6.5. Evaluation of program effectiveness takes account of developments in best practice to support continuous program improvement. 6.6. Program audit procedures are established and communicated.

Variable	**Range**
Workplace programs	are developed to meet company policy objectives and are consistent with legislative requirements, codes, industrial awards and agreements, licensing arrangements and contractual arrangements and agreements
Programs and related documentation	may be: • stand-alone or integrated
Program design	takes account of contextual issues including: • legislative responsibilities • workplace culture • budgets and people, including language and literacy levels of program users
Formal responsibility	for program design and/or review may be shared with others
Management systems	to support program implementation include: • organizational structure

	• planning activities • responsibilities • practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the policy, • managing the risks associated with the activities conducted in the workplace

Evidence Guide	
Critical aspects of competence	A candidate must demonstrate the ability to: • define the parameters of the program • determine compliance requirements for program and conduct risk analysis • identify and engage relevant personnel through consultative mechanisms • design/develop program procedures to ensure compliance is achieved • complete detailed reporting to support the maintenance of compliance • provide support to personnel to ensure compliance • program is reviewed and monitored to ensure compliance is maintained
Underpinning Knowledge	Demonstrate Knowledge of: • objectives of legislation, regulations and relevant codes of practice relating to the program area, including the roles of relevant regulatory bodies • company policy objectives, related legal requirements and workplace context, including resource capacity, authority levels, existing systems and processes, such as consultation processes, development/training systems, process improvement, document control and recording requirements • workplace program objectives, their relationship to policy objectives and to related programs, including the benefits of the program for the company, employees and the wider community as appropriate • the concept of a management systems as it applies to the program area • the advantages and disadvantages of stand-alone and integrated programs, including variations in legal obligations and compliance systems, objectives and structure of related policies and programs, as well as consideration of audit trails, as appropriate • principles and processes for hazard identification, risk assessment and control

	• the program area and/or internal and external experts and resources to support design and implementation • the circumstances, conditions or practices likely to result in program non-compliance and related control options • technical knowledge and/or access to technical expertise to ensure adequacy of risk control methods and response to non-compliance/emergencies • problem solving and process improvement techniques and processes • program review methods and responsibilities, including internal audit arrangements, as well as external audit arrangements, and where the program supports legal compliance obligations, requirements and frequency of audits
Underpinning Skills	Demonstrate skills to: • identify roles and responsibilities for program development and maintenance, where appropriate this includes negotiating/confirming levels of authority • identify and report on resource requirements to support implementation, such as human resources, capital equipment, training, support systems (e.g. maintenance and financial support), and where relevant, negotiate access to resources within level of responsibility • confirm that personnel involved in implementation have the required skills and knowledge to carry out their role, including identifying and addressing skill gaps • review strategies for provision of information to identify opportunities for improvement in conveying information appropriate to program requirements and the audience to ensure that information is accessible to and understandable by all employees • establish and/or review consultative arrangements to confirm that they are effective channels of two-way information and forums for raising issues and generating ideas, that all areas and levels of the workgroup have opportunity for input, and there is feedback to contributors on the outcome of consultation • develop/review procedures to support implementation (procedures must be documented and documents must be controlled, which may require the development of an appropriate system for recording and managing procedures) • establish/review monitoring mechanisms to ensure that records are accurate and timely

	• establish/review procedures to ensure that records and related program information are utilized to support program improvement • trial/review implementation of procedures and identify opportunities for improvement • use communication skills to interpret and complete work information to support operations of work team or area, and to support a review of existing information and/or design of information formats to meet program and audience requirements • demonstrate and support cooperative work practices within a culturally diverse workforce
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Construct a Process Control Chart for a Food Processing Operation**
Unit Code	**IND FPM5 04 0613**
Unit Descriptor	This unit describes the skills and knowledge to construct a process control chart based on a sound knowledge of statistics and the ability to determine Process Capability for equipment. This unit applies to food processing staffs that have roles in product design, or quality and production management. The unit typically applies to staff that have responsibility for establishing and maintaining product safety, quality and efficiency in food processing. The unit can apply to all sectors of food production including general food production, meat and seafood industries.

Elements	Performance criteria
1. Apply tools and techniques to collect and present data	1.1 The key characteristics and uses of attribute and variable data are identified. 1.2 The concepts of frequency and distribution are described. 1.3 The frequency and distribution of supplied data for various measurement levels are determined. 1.4 Data collection tools including check sheets, surveys and logs are described and used. 1.5 Appropriate charts and graphs using available data are constructed.
2. Interpret charting tools and techniques in process control.	2.1 The concept of process capability and its implications are discussed. 2.2 Probability distributions in analyzing process capability are used. 2.3 Control charts used to monitor processes are interpreted. 2.4 The application of charting methods to establishing process capability, evaluating process changes and interpreting simple experiments is identified.
3. Construct a process flow chart.	3.1 Scope and purpose of Average & Range charts in the food industry are identified. 3.2 All relevant parameters for use in preparing both Average and Range charts are statistically calculated. 3.3 Average and Range charts, showing all pre-calculated

	parameters, are prepared. 3.4 Trends and cyclic patterns of Average and Range charts are interpreted. 3.5 An action plan is designed based on the results of Average and Range.

Variable	**Range**
Occupational health and safety requirements	• Codes of practice, regulations, Material Safety Data Sheets (MSDSs) • Enterprise and process specific occupational health and safety requirements
Policies and procedures	• Codes of practice, regulations, MSDSs • Enterprise specific requirements • Relevant occupational health and safety acts, regulations, national standards, codes of practice and guidance notes which may apply in jurisdiction • Ethiopian and international standards • Food safety legislation • Relevant equipment and software for data analysis

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge competence to: • apply tools and techniques for analyzing in specification or out of specification production processes • identify and explain patterns of variation exhibited by distributions • construct a process flow chart • interpret Control Charts • determine process capability for a food processing operation.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • the terms statistic and parameter • the concept of statistical inference • principles of variability and variance • the relationship between probability and statistical inference • the concept of variation within processes and recognition of its implications for process design and management • the scope and purpose of Average & Range charts in the food industry • all relevant parameters for use in preparing both Average and Range chart • pre-calculations of parameters of Average and Range charts • trends and cyclic patterns of Average and range charts • the preparation of an action plan based on the results of Average and Range

	• the definition of process capability • process capability values
Underpinning Skills	Demonstrates skills to: • identify the types of causes of variation • identify probability principles • apply Poisson and binomial distributions to supplied attribute data • identify the characteristics of the Normal distribution • calculate and interpret indices of variability • identify skewed distributions • calculate and interpret indices of significance and variance • calculate and interpret indices of probability • identify and explain the role of Statistical Quality Control (SQC) • discuss the concepts of process capability, acceptance levels and process improvement • apply the uses of Average & Range charts in the food industry • calculate statistically all relevant parameters for use in preparing both Average and Range chart • prepare Average and Range charts showing all pre-calculated parameters • interpret trends and cyclic patterns of Average and range charts • prepare an action plan based on the results of Average and Range • describe and calculate measure of central tendency • identify the principles of process capability • calculate all relevant parameters for the determination of process capability statistically • interpret process capability value in relation to the overall process • represent data in graphs, tables, averages and percentages • prepare a report with recommendations regarding the outcomes of the process capability
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Specify and Monitor the Nutritional Value of Processed Food**
Unit Code	**IND FPM5 05 0613**
Unit Descriptor	This unit covers the skills and knowledge required to provide nutritional information for processed food, and to implement procedures to optimize the nutritional value of a product. This unit applies to production, and technical managers who are required to specify and monitor the nutritional value of foods through processing and to verify the accuracy of label information, and to product developers who are required to assess nutritional value and properties of a new product.

Elements	Performance Criteria
1. Ensure label information is accurate and complete	1.1 The dietary intakes and requirements for an identified consumer group for a food product are identified. 1.2 Food storage and preparation information related to maintaining nutritional value and food safety are provided. 1.3 Organizational and NHMRC Ethiopian Dietary Guidelines for nutritional information on product labels are applied.
2. Evaluate methods of preserving nutrients during food processing and storage	2.1 The effects of food processing and storage conditions on the stability of certain nutrients are analyzed. 2.2 The need for fortification of processed foods in the Ethiopian diet is evaluated. 2.3 Food processing and storage methods are evaluated for their impact on the nutritive value of product.
3. Assess the benefits of food products developed or modified to meet the needs of a customer group	3.1 Common nutritional deficiencies and related diseases are evaluated. 3.2 Appropriate diets for customers with specific requirements or health challenges are identified. 3.3 ***Modified*** and ***functional foods*** are identified and categorized. 3.4 The main benefits of food products developed or modified to meet the nutritional needs of special groups are assessed.

4. Apply nutritional information and issues to product development, labeling and marketing of processed foods.	4.1 Nutritional requirements to be considered, during product development, are evaluated and applied. 4.2 The legal requirements for nutritional labeling food products are applied. 4.3 Nutritional issues, in relation to the legal and ethical marketing of processed foods, are evaluated.

Variable	**Range**
Modified foods	Fresh or processed food which has had components added (e.g. Vitamin C enriched) or reduced (e.g. low fat milk)
Functional foods	Any fresh or processed food claimed to have a health-promoting or disease-preventing property beyond the basic function of supplying nutrients. Fermented foods with live cultures are considered as functional foods with probiotic benefits.
Policies and procedures	Codes of practice, regulations, Safety Data Sheets (SDSs) Enterprise specific requirements
Food processing Regulations/ Standards/ Guidelines	• Ethiopian and international standards • Codex Food Processing Standards • Acts of Parliament • Ethiopian Health & Nutrition Research Institute guideline • Ethiopian dietary guidelines
Organizations	May include: • National Health & Nutrition Research Institute • National Heart Foundation of Ethiopia (NHFE) • Dietitians Association of Ethiopia • Ethiopian Society of Clinical Immunology and Allergy
Nutraceuticals	Includes functional foods that also aid in the prevention and/or treatment of disease(s) and/or disorder(s) (except anaemia),

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge competence to: • identify, review and apply nutritional information, • compare the nutritional needs of special population groups, and • evaluate nutritional issues in relation to product development, labeling and marketing of processed foods.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • key macro and micro nutrients for a healthy diet • the processes of digestion, absorption and energy metabolism in the human body

	• human energy requirements • dietary guidelines and legislative requirements related to processed foods • the effects of processing and storage on nutrients, and the methods for overcoming these effects • the role of proteins in nutrition • the role of carbohydrates in nutrition • the role of vitamins and minerals in nutrition • the role of dietary fiber • the role of lipids in nutrition • the body's processes for storing and using water and its role in nutrition • nutritional related risk factors and diseases • food intolerances and allergies • functional foods • diseases caused by nutritional deficiencies • modified and functional foods and nutraceuticals
Underpinning Skills	Demonstrates skills to: • recognize key macronutrients required for a healthy diet • establish the processes of digestion and absorption • establish the process of energy metabolism in the human body • apply knowledge of nutrition to food processing • identify, review and apply key and current nutritional information • compare the nutritional needs of special population groups • evaluate a food product for its nutritional properties • evaluate nutritional issues in relation to product development, labeling and marketing of processed foods • identified nutritional related risk factors and diseases • establish public health and environmental hazards, in relation to nutrition
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Develop, Manage and Maintain Quality Systems**
Unit Code	**IND FPM5 06 0613**
Unit Descriptor	This unit covers the skills and knowledge required to establish, maintain and control an enterprise quality system. It also covers the skills and knowledge needed to lead people, manage systems and build quality into all enterprise systems and operations. The development and management of quality systems affects the ability of the enterprise to operate in specific markets and influences customer and consumer confidence in enterprise products. This unit is of particular interest to Quality Assurance (QA) managers and personnel, production managers and supervisors operating in a meat industry context. At this level individuals exercise considerable responsibility and accountability within enterprise structures and are required to make primary contributions to the values, goals and operations of the enterprise.

Elements	Performance criteria
1. Establish requirements of the quality system	1.1. Policies expressing the organization's commitment to the quality system and processes are developed. 1.2. Legislative requirements are identified for enterprise quality systems. 1.3. Scope and objectives of the quality system are determined, including links with all enterprise operations, customers, suppliers and contractors. 1.4. Quality performance standards, including customer and supplier service standards, are established consistent with the direction and goals of the enterprise. 1.5. Resource requirements are identified and included in financial, human resource and operational plans.
2. Design and prepare for the quality system	2.1. ***Quality systems*** are selected and designed to meet enterprise, customer and regulatory ***requirements***. 2.2. Quality principles underpin all enterprise operations to achieve business goals and performance standards. 2.3. Responsibilities for development, implementation and operation of the system are clearly defined and communicated. 2.4. Personnel from all levels and areas of the organization are involved in the development and implementation of the quality system.

	2.5. ***System components**,* procedures and supporting ***documentation*** are developed and validated. 2.6. Consultative and communication strategies are developed to link the quality system with all aspects of enterprise operations. 2.7. Supplier or contractor service standards and ***audit*** requirements are determined and negotiated. 2.8. ***Performance measures*** and indicators are developed to measure performance against policies, goals and performance standards.
3. Implement and monitor the quality system	3.1. Implementation plan is prepared and resourced. 3.2. Training plans to provide personnel at all levels with quality concepts and skills are prepared and resourced. 3.3. Quality system requirements and customer focus are addressed in the establishment, operation and evaluation of all enterprise systems. 3.4. Control and preventative action measures are identified and validated. 3.5. Corrective action procedures are developed and monitored. 3.6. Procedures for reporting, recording and responding to non-conformances and non-compliances are established. 3.7. Customer and supplier service standards are monitored and documented. 3.8. Quality data is collected and analyzed, and implications reported. 3.9. Quality costs and performance are ***monitored***. 3.10. Quality system is prepared for external review and approval by relevant authorities.
4. Continuously improve the quality system	4.1. Impacts of the quality system on enterprise operations are monitored and reviewed. 4.2. Responses to customer complaints and requests are resolved and used to improve the system. 4.3. Procedures for the ongoing identification and resolution of issues are established. 4.4. Quality system is updated for changes in process, technical information, customer and regulatory requirements. 4.5. ***Stakeholders*** are included in decision making and continuous improvement processes and strategies.

	4.6. Quality results, findings and conclusions are fed into improvement processes. 4.7. Costs and benefits of the quality system are analyzed. 4.8. Quality goals and targets are continuously reviewed.
5. Communicate quality outcomes	5.1. Certification of product and processes consistent with quality outcomes is completed according to customer and ***regulatory requirements.*** 5.2. Regulatory authorities and agencies are promptly notified of breaches and non-compliance incidents. 5.3. Quality outcomes are used to promote public confidence in enterprise products and services.

Variable	**Range**
Quality systems	may include: • food and meat safety • industry specific standards • international standards (e.g. ISO 9000 series) • Meat Safety Enhancement Program (MSEP) • Meat Safety Quality Assurance (MSQA) • Personal Qualities Assessment (PQA) • trade description and certification systems.
Requirements of the quality system	may include: • control of documents, data and quality records • coverage of contracts, purchasing, supply, processing, handling, storage, packaging, preservation, storage and delivery of meat and meat products • definition of management responsibilities • design and process controls • inspecting and testing, control of non-conforming product, preventative and corrective action, and auditing • management of links and impacts on all systems within the enterprise • production identification and traceability • training.
Systems components and procedures	include: • correction (e.g. disposition, corrective action, liability management and customer complaint resolution) • prevention (e.g. training, operator feedback, manuals, technology and equipment reliability and maintenance, statistical collection and information, supplier QA, Standard Operating Procedures (SOPs) and work instructions).

Where the quality system relates to food safety, relevant documentation	may include: • amendment registers • Critical Control Points (CCP) monitoring forms and additional monitoring requirements and supporting programs • critical control point work instructions • HACCP audit table • HACCP team register, product description and use • process flow charts, factory floor plan and hazard analysis table • schedules relating to hygiene, cleaning and sanitation procedures, work instructions, approved chemicals, calibration, pest control, training, and product identification and recall.
Audits of performance	may include: • compliance with regulatory requirements • external reviewers • human resource performance • QA, including meat and food safety • safety, energy and environment.
Performance measures for the total quality cost	may include: • quality cost per kg of product • quality cost per dollar of direct production costs.
Monitoring and analysis	may be: • periodic (e.g. hourly, daily and weekly) • in real time (electronically).
Stakeholders	may include: • company owners, directors, shareholders and financiers • competitors • management and employees • suppliers, customers and consumers • unions and employer associations.
Regulatory requirements	may include: • animal welfare • commercial law, including fair trading and trade practices • consumer law • corporate law, including registration, licensing and financial reporting • environmental and waste management • Export Control Act • hygiene and sanitation requirements • industrial awards and agreements • relevant regulations • regulations regarding meat processing • taxation.

Systems for the communication of quality outcomes	may include: • development of quality teams • newsletters, bulletins and awards • problem-solving teams and sessions • quality meetings or circles and training.
Certification	may include: • Ethiopian-MEAT Standards certification • importing country requirements • public health requirements.
Statistical data analysis	may include: • correlation and regression analysis, bi-variate and multi-variate analysis • distribution • estimating and hypothesis testing • management • probability and statistical inference • process stability, capability and management • reliability planning • sampling • statistical process control requirements and charting applications • variations and variation monitoring.
Quality tools	may include: • cause and effect and fish bone diagrams • control charts • data points • flow charts • histograms • prioritization matrices • process improvement models • process capability • pareto charts and team structures.
Data management systems	may be manual or computerized, cover data collection, data monitoring and data analysis and interpretation, and may include: • bar coding, identification, tagging and trace back systems • calculators • charting and graphing materials • computer software packages (e.g. spreadsheets and statistical analysis packages) • computerized equipment • manual measuring equipment (e.g. thermometers, pressure gauges and scales) • monitoring sheets and records.

Data analysis and interpretation	may include: • Acceptable Quality Level (AQLs) • Chemical Lean (CL) levels • microbiological analysis (e.g. Total Viable Counts (TVC) and e-coli counts) • process capability analysis • process variation analysis • product monitoring • statistical process control • temperature (e.g. cooling and chilling rates).
Communication	may be: • be with culturally, ethnically and socially diverse individuals and groups • involve information and communications technology (e.g. databases, internet search and e-commerce services) • occur in a variety of sensitive, conflictive, collaborative and supportive environments • be formal or informal and involve face to face, technological and electronic methods • require analysis and presentation of complex concepts, technical information, mathematical information and other data in simple or complex formats • require preparation of reports which may be complex, contain information from a range of technical sources and include mathematical and graphic information and data.
Mathematical skills	may relate to: • complex actual and hypothetical technical and financial modeling • calculations and interpretation and analysis • mathematical information, such as: ➢ product and product quality ➢ financial operations ➢ personnel ➢ operations ➢ sales and turnover ➢ exports.
OHS requirements	may include: • enterprise OHS policies, procedures and programs • OHS legal requirements • Personal Protective Equipment (PPE): ➢ coats and aprons ➢ ear plugs or muffs ➢ eye and facial protection ➢ head-wear ➢ lifting assistance

	➢ mesh aprons ➢ protective boot covers ➢ protective hand and arm covering ➢ protective head and hair covering ➢ uniforms ➢ waterproof clothing ➢ work, safety or waterproof footwear • requirements set out in standards and codes of practice.
Workplace requirements	may include: • enterprise-specific requirements • OHS requirements • QA requirements • Standard Operating Procedures (SOPs) • the ability to perform the task to production requirements • work instructions.
Monitoring systems and strategies	may include: • audits and reviews • feedback from stakeholders • inspection and testing procedures and regimes, including chemical and microbiological testing procedures, for validation and verification • statistical collection and analysis.
Quality costs	may include: • appraisal (e.g. design appraisal, inspection, depreciation of quality equipment, process control and end product testing) • failure (e.g. scrap and waste, reinspection or retesting, disposal, down time, product downgrading, product liability, loss of custom, returned product and complaints) • prevention (e.g. training, auditing, process control engineering, testing, reporting and recall systems).
Third-party certification	may include: • Ethiopian Quarantine Inspection Service accountabilities and inspection stamps/seals • customer requirements and specifications, including importing country requirements • licensing or registration requirements • national or international quality endorsement • product description and certification.
Audit processes	include: • planning • establishing controls • developing the team • conducting entry/exit meetings • controlling caucus meetings • issuing corrective action requests

	• preparing reports • giving feedback and input into the improvement of the system.
Process capability	includes: • operational capability (e.g. resources, risks, opportunities and commitments) • technical capability (e.g. personnel, equipment, systems and suppliers).

Evidence Guide	
Critical aspects of Competence	Must demonstrate knowledge and skills competence to: • Establish requirements of the quality system • Design, prepare, implement, monitor and continuously improve for the quality system • Communicate quality outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • key concepts, philosophies and tools of quality management • management and organizational structure of the enterprise and its impact on enterprise systems • the role audits play in a quality system • documentation requirements of the quality system, including levels, and their roles in the functioning of the system, including the requirement for effective and secure quality record keeping systems • enterprise goals and directions and their implications for the quality system • process capability • applicable quality standards, regulations, codes, legislation and customer requirements for the quality system and explain the implications for the enterprise • legal requirements for the establishment and maintenance of the enterprise QA system including responsibilities for reporting breaches to authorities and implementing audit findings • principles and functions of hazard analysis and control, validation, including auditing, and verification in quality systems
Underpinning Skills	Demonstrate skills to: • analyze complex statistical data and prepare corrective responses to non-conformances and variations identified in the data, relevant to enterprise quality systems and operations • apply quality concepts and tools to problem solving and the development of quality data collection, data management systems and analysis strategies

	• apply substantial product and process knowledge to the development of the quality system and the interpretation of quality data • apply relevant communication and mathematical skills • communicate quality goals, requirements and findings to stakeholders in formats and styles appropriate to the context and purpose • develop quality policies for the enterprise in consultation with senior management and other stakeholders • develop consultative and feedback procedures and opportunities for identification and resolution of quality issues and problems • develop continuous improvement processes and team building using the 'plan, do, check, act cycle' • consult, negotiate with and report to regulatory authorities openly and promptly, consistent with enterprise ethical standards, including the notification of breaches and the preparation of non-compliance reports • develop workforce commitment, capability and responsibility for the quality system, including identifying, negotiating and scheduling training, inclusion of responsibilities and duties relating to quality system implementation and integration in all job descriptions and work instructions, clear communication of responsibilities and requirements, delegation of tasks and responsibilities and inclusion of the workforce in consultative and continuous improvement processes • ensure the quality system meets legislative and regulatory requirements • exercise judgment, pragmatism and quality knowledge in the management and resolution of quality issues and problems • identify and apply relevant Occupational Health and Safety (OHS) and workplace requirements • identify appropriate monitoring systems and strategies to support the enterprise quality system • identify, research and update sources of quality information and advice, including technical and regulatory information to support enterprise quality system • lead personnel (e.g. Hazard Analysis Critical Control Point (HACCP) team, management, quality team, meat inspection team, laboratory, maintenance teams, processors and operators) in the implementation and improvement of the quality system

	• monitor and analyze the costs of the quality system, including prevention costs, appraisal costs, total quality costs and failure costs • monitor and certify processes and product to meet third - party requirements (e.g. importing country, public health requirements and customers) • oversee audit processes (internal and external), act on audit findings and provide feedback to personnel for improvement of the system • oversee the preparation for third party certification (where appropriate) • plan and resource the enterprise training strategy, consistent with regulatory requirements, to assist personnel at all levels in the implementation of the quality system • prepare and sign off quality policies, manuals and documentation for the enterprise, including the preparation and updating of preventative, corrective and responsive procedures and strategies, supplier criteria and specifications, supplier and contractor audit requirements • prepare quality implementation plans, identifying goals, key personnel and areas, resources, strategies, timelines and milestones • present reports according to legal and enterprise requirements • resolve customer complaints promptly and provide corrective action responses • use appropriate questioning, observation, listening and recording skills in the collection and monitoring of quality data • where quality systems are based on HACCP principles or Good Manufacturing Practice (GMP), explain these principles and the implications for the enterprise quality system.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Apply Food Microbiological Techniques and Analysis**
Unit Code	**IND FPM5 07 0212**
Unit Descriptor	This unit covers the skills and knowledge required to perform tests and analysis in a food based microbiological laboratory. It requires high level skills in identifying the type of microbiological testing required, ensuring that test procedures follow documented protocols, and analyzing and reporting the conclusions from testing to operation managers. This unit applies to senior technical staff, and production managers, who are required to analyze the microbiology of food in food processing operations.

Elements	Performance Criteria
1. Identify food poisoning and spoilage bacteria, including methods of control.	1.1 The major bacteria responsible for food poisoning and spoilage are identified. 1.2 The types of processes used in the control of microbial growth in food products are evaluated. 1.3 The effect of a standard food preserving technique over a range of pH, on the growth patterns of microbes is ascertained. 1.4 The effectiveness of this food preserving technique in controlling food poisoning and spoilage microbes is evaluated. 1.5 The usefulness of this technique, as part of process control of food poisoning and spoilage microbes is assessed. 1.6 Compliance with Food Standards is assessed for food preservation techniques.
2. Perform microbiological techniques for the identification of food borne disease.	2.1 Standard microbiological techniques to identify and enumerate food poisoning and spoilage organisms, from a food sample, are used. 2.2 The type of toxins, produced by the major food pathogens, is identified. 2.3 Documented food borne disease outbreaks, from the past, are investigated. 2.4 The ramifications of product contamination in terms of Public Health and product shelf-life quality are determined. 2.5 Specimens and waste are handled in accordance with enterprise OHS guidelines.

3. Apply the principles of microbiological quality control.	3.1 The spoilage patterns of specific foods at different temperatures of storage are ascertained. 3.2 The relationship between spoilage patterns and the growth cycle of the specific food spoilage/poisoning organisms is determined. 3.3 A microbiological quality control program for a specific food is designed, implemented and evaluated in terms of the Food Standards. 3.4 The importance of plant hygiene and how it can affect the finished product is determined. 3.5 Specimens and waste are handled in accordance with enterprise OHS guidelines.
4. Apply rapid microbiological techniques and other relevant technology for the identification of microbes related to plant hygiene.	4.1 The principles of accelerated culture techniques are critically examined. 4.2 The relevance of rapid microbiological technology, as related to control of plant hygiene, is identified. 4.3 A series of tests to determine the adequacy of plant sanitation procedures, by rapid microbiological or other techniques, is performed. 4.4 Specimens and waste are handled in accordance with enterprise OHS guidelines.
5. Perform techniques involving microbial fermentations.	5.1 The types and characteristics of microorganisms used for fermentation within the food industry are identified. 5.2 Standard microbiological techniques to isolate and identify yeasts and bacteria in given food samples are used. 5.3 Sub-culturing and pure culture techniques for "scale up" to "starter" cultures are performed. 5.4 New culture strains after fermentation are maintained using standard techniques.
6. Analyze test results and provide recommendations to process controllers or production managers.	6.1 Results of microbiological tests are recorded and collated 6.2 Microbiological data is analyzed and compared with food safety and food processing critical control limits and other parameters 6.3 Implications of test results are established and conclusions are drawn 6.4 Test results, conclusions and recommendations are documented and presented to food processing management

Variable	Range
Policies and procedures	• Codes of practice, regulations, Safety Data Sheets (SDSs) • Enterprise Standard Operating procedures (EOPs): • safety requirements for equipment, materials or products • cleaning, hygiene, personal hygiene requirements • incident and accident/injury reports • Ethiopian and international standards, including: • Food Standards Code 2002 Ethiopia New Zealand and amendments • Good laboratory practice • Safety in Laboratories • Food microbiology • Enterprise Standard Operating procedures(SOPs) • OHS legislation and enterprise requirements

Evidence Guide	
Critical Aspects of Competence	must include evidence of the ability to: • use a range of microbiological techniques in food processing in compliance with quality and food safety system requirements, • apply rapid microbiological analysis techniques, and • perform techniques involving microbial fermentations.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • processes used in the control of microbial growth in food products. • major bacteria responsible for food poisoning and spoilage • processes used in the control of microbial growth in food products. • Food Standards • statistical methods for process control including Viable Count Methods • standard microbiological techniques to identify food poisoning and spoilage organisms • microbiological toxins as produced by major food pathogens • spoilage patterns • growth cycle of micro organisms in food • microbiological quality control programs • plant hygiene, including sanitation checks – rinse, swab, contact and rapid methods • rapid microbiological techniques - • accelerated culture techniques • rapid biochemical tests • measurement of total bacteria metabolism

	• measurement of spoilage • non-traditional methods • automated and mechanized methods • types and characteristics of fermentation micro-organisms, including • Saccharomyces spp., Streptococcus spp. and Lactobacillus spp. • standard microbiological techniques to isolate and identify yeasts and bacteria in given food samples • sub-culturing and pure culture techniques for "scale up" to "starter" cultures • maintenance of new culture strains after fermentation • critical control limits and microbiological processes and species in food production • analysis of microbiological data by comparison with food safety and production standards • effective data presentation and reporting
Underpinning Skills	Demonstrates skills to: • identify the major bacteria responsible for food poisoning and spoilage • evaluate processes used in the control of microbial growth in food • ascertain the effect of a standard food preserving technique on the growth patterns of microbes • use standard microbiological techniques to identify and enumerate food poisoning and spoilage organisms, from a food sample • identify the type of toxins, produced by the major food pathogens • investigate documented food borne disease outbreaks from the past • determine the ramifications of product contamination in terms of Public Health and product shelf-life. • handle specimens and waste in accordance with enterprise OHS guidelines. • ascertain the spoilage patterns of specific foods at different temperatures of storage. • determine the relationship between spoilage patterns and the growth cycle of the specific food spoilage/poisoning organisms • determine the importance of plant hygiene and how it can affect the finished product • critically examine the principles of rapid microbiological techniques, including: ➢ accelerated culture techniques

	➢ rapid biochemical tests ➢ measurement of total bacteria metabolism ➢ measurement of spoilage ➢ non-traditional methods ➢ automated and mechanized methods • identify the relevance of rapid microbiological technology, as related to control of plant hygiene • perform a series of tests to determine the adequacy of plant sanitation procedures, by rapid microbiological or other techniques, including: ➢ rinse methods ➢ swab methods ➢ replica or contact methods • identify the types and characteristics of microorganisms used for fermentation within the food industry, including: Saccharomyces spp., Streptococcus spp. and Lactobacillus spp. • use standard microbiological techniques to isolate and identify yeasts and bacteria in given food samples • perform sub-culturing and pure culture techniques for "scale up" to "starter" cultures • maintain new culture strains after fermentation using standard techniques. • record, analyze and present data, with associated conclusions and recommendations
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Identify the Biochemical Properties of Food**
Unit Code	**IND FPM5 08 0613**
Unit Descriptor	This unit covers the skills and knowledge required to identify and apply knowledge of biochemical substances and reactions to food product development and processing. This unit applies to technical and management staffs that have responsibility for maintaining product safety, quality and efficiency in food processing. The unit can apply to all sectors of food production including general food production, meat and seafood industries.

Elements	Performance criteria
1. Use and apply terms and concepts relating to organic substances important in food processing.	1.1 Biochemical terminology relating to food processing is used accurately. 1.2 Relevant concepts are applied to explain the biochemistry in food processing.
2. Identify biochemical compounds and explain biochemical reactions important in food processing.	2.1 Biochemical compounds carbohydrates; amino acids, proteins and lipids are identified and classified. 2.2 Molecular structures are depicted for important biochemical compounds. 2.3 Chemical and physical behavior associated with carbohydrates, amino acids, proteins and lipids is identified including the molecular processes taking place. 2.4 Basic tests are performed to identify ***biochemical reactions*** and the associated physical and chemical changes in food processing.
3. Assess the impact of food processing operations on the biochemistry of processed food products	3.1 Biochemical macro constituents and micro constituents of food are identified. 3.2 Effect of processing on biochemistry and nutritional value of foodstuffs is assessed. 3.3 Biochemical actions of food additives are identified. 3.4 Biochemical principles relating to the spoilage and preservation of foods are explained.

4. Extract samples of product or raw materials for biochemical testing and apply the results to food production processes	4.1 Properties of biochemical compounds and their extraction techniques are established for a food processing operation 4.2 Sampling is conducted according to the sampling plan and the tests to be conducted 4.3 Sample purity and integrity are maintained prior to testing 4.4 The results of ***biochemical testing*** are applied to ingredient selection and process control for a food processing operation

Variable	**Range**
Biochemical reactions	These may include any reactions relevant to food processing operations including: • oxidation • hydrolysis • enzymic reactions • lipid isomerisation • lipid polymerisation • polysaccharide synthesis • glycolysis • protein denaturing
Biochemical testing	This may include any tests applicable to food products such as: • Benedict's test for glucose • Lugol's iodine test for starch • Biuret test for protein • Sudan III test for fats & oils
Policies and procedures and legislation	may include: • Ethiopian and international standards • Acts of Parliament • Legislative requirements are typically reflected in procedures and specifications. Legislation relevant to this industry includes the Food Standards Code including labeling, weights and measures legislation and legislation covering food safety, environmental management, occupational health and safety, anti-discrimination and equal opportunity.
Ethiopian and international standards	may include: • Ethiopian and international standards • General requirements for the competence of testing and calibration laboratories • Dairy Food Safety standards • ISO 9000 series Quality management and quality assurance standards

Equipment and materials	may include: • General equipment may include hotplates, ovens, melting point and boiling point apparatus, steam baths, appropriate glassware and chemicals. • Analytical instruments may include spectrometric instruments such as: ➢ ultraviolet/visible ➢ infrared including Fourier transform infrared and near infrared ➢ atomic absorption including flame and flameless

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • Use and apply terms and concepts relating to organic substances important in food processing. • Identify biochemical compounds and explain biochemical reactions important in food processing. • Assess the impact of food processing operations on the biochemistry of processed food products • Extract samples of product or raw materials for biochemical testing and apply the results to food production processes
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • terminology relating to biochemical substances • the structure and properties of the biochemical compounds carbohydrates; amino acids, proteins and lipids • the molecular structures for important biochemical compounds • the chemical and physical behavior associated with carbohydrates, amino acids, proteins and lipids in terms of molecular theory • basic tests to identify biologically important biochemical materials including: ➢ Benedict's test for glucose ➢ Lugol's iodine test for starch ➢ Biuret test for protein ➢ Sudan III test for fats & oils ➢ sampling and testing techniques to determine the components and biochemical reactions for food products
Underpinning Skills	Demonstrates skills to: • identify the major chemical constituents found in foods • interpret the biochemical principles relating to the preservation of foods • apply sampling techniques to test for biochemical properties

	• identify the biochemical action of important food additives • carry out biochemical testing to determine the components of a food product • apply the results of biochemical testing to maintain product quality and safety in food processing
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Manage Effective Operation of Enterprise Cold Chain and Refrigeration Systems**
Unit Code	**IND FPM5 09 0613**
Unit Descriptor	This unit covers the skills and knowledge required to plan and oversee the effective operation of enterprise cold chain and refrigeration systems to ensure product quality and food safety. It also covers ways to manage and reduce the costs of cold chain operations. Cold chain systems and operations are critical to the quality and food safety of enterprise products and their efficient management will help minimize the cost of production and maintain regulatory compliance. This unit is applicable to production managers, plant engineers, Quality Assurance (QA), maintenance and chiller managers or coordinators.

Elements	Performance criteria
1. Assess enterprise cold chain system requirements	1.1. Enterprise goals, directions and forecasts are analyzed and the implications for ***cold chain*** requirements are determined. 1.2. Enterprise refrigeration systems, cold chain, technical support team and operations are documented. 1.3. Regulatory and customer requirements relating to the operation and maintenance of refrigeration systems are identified. 1.4. Enterprise requirements for specialized refrigeration advice and expertise are determined. 1.5. ***Optimum refrigeration requirements*** to maintain quality and safety of products are determined. 1.6. Performance standards and targets including standards related to food safety, cost, quality and waste are established.
2. Manage and control cold chain systems	2.1. Procedures for the hygienic and safe operation and maintenance of refrigeration or cold chain systems are developed according to quality, food safety, manufacturer specifications, and customer and enterprise requirements. 2.2. Contingency plans and procedures for systems failure or overload are prepared and conveyed to relevant personnel.

	2.3. Emergency procedures and plans are prepared and included in health and safety systems, procedures, training and work instructions. 2.4. Strategies for communicating and resolving systems problems and failures with ***stakeholders*** are prepared.
3. Monitor refrigeration and cold chain system performance	3.1. Performance information requirements and data collection strategies are determined and developed. 3.2. Monitoring procedures for the operation of refrigeration or cold chain systems are established and maintained. 3.3. Non-conformances are investigated, reported where required and corrective actions implemented. 3.4. Preventative and control procedures are developed and implemented to prevent future non-conformance.
4. Improve refrigeration system performance	4.1. Performance data is analyzed and measured against performance standards, including product quality and cost requirements. 4.2. Energy costs of refrigeration systems are calculated and monitored. 4.3. ***Strategies for improving performance*** and minimizing costs are developed and implemented. 4.4. Refrigeration system requirements are included in budgets and forward planning.

Variable	**Range**
Cold chain systems	May include: • chillers • freezers • other temperature controlled areas. Cold chain may extend from point of slaughter, dairy plant or fruits and vegetable farms to retail outlet and include transportation.
Optimum refrigeration requirements	may relate to technical requirements (e.g. heat load transfer and efficiency) for efficient and cost-effective systems, and capacity to meet enterprise production, product and food safety requirements.
Stakeholders	may include: • company owners, directors, shareholders, financiers • competitors • refrigeration specialists • management and employees • suppliers, customers, consumers

	• unions and employer associations • regulators.
Strategies for improving performance	may include assessment of alternative refrigeration strategies such as: • different configurations and types of chillers • repair, upgrade or purchase of new equipment and systems • use of alternative energy sources or alternative refrigeration service models such as: ➢ combination of internal and external expertise ➢ external contractors ➢ internal personnel and use of technology.
Performance measures for cold chain systems	may relate to • costs • energy consumption • food safety and legal requirements • product quality and customer specifications.

Evidence Guide	
Critical aspects of Competence	Must demonstrate knowledge and skills competence to: • refrigeration concepts and terms • strategies for reducing heat • impact of high and/or low humidity on eating quality, production and storage of meat and meat products • impact of moisture transfer during chilling and freezing on quality • processes and methods for chilling and freezing meat and meat products dairy, fruits and vegetable products and their impact on product quality, food safety and tenderness • methods of chilling and freezing meat and meat products dairy, fruits and vegetable products • relevant regulatory requirements including food safety regulations and the implications for the management of the enterprise refrigeration or cold chain systems • apply calculation skills and budget principles to refrigeration costs • apply relevant communication and mathematical skills and processes • operate refrigeration or cold chain systems efficiently • prepare safety procedures for chillers or refrigeration systems • take action to improve own work practice as a result of self-evaluation, feedback from others
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • refrigeration concepts and terms including: ➢ ambient temperature

	➢ Biot number: ratio of conductive (internal) resistance to heat transfer to the convective (external) resistance ➢ half cooling time ➢ surface heat transfer ➢ thermal properties of meat including conductivity • strategies for reducing heat loads, such as: ➢ air curtains ➢ automatic door closers ➢ improved insulation to prevent heat filtration through wall ➢ no lights, people, machinery inside ➢ plastic strips ➢ removal of heat load caused by fans • impact of high and/or low humidity on eating quality, production and storage of meat and meat products, dairy, fruits and vegetable products • impact of moisture transfer during chilling and freezing on quality, production and storage of meat and meat products, dairy, fruits and vegetable products • impact of packaging on chilling and freezing rates of meat and meat product, dairy, fruits and vegetable products • concept of heat load and the implications for product quality and energy requirements for refrigeration system • methods of chilling and freezing meat and meat products dairy, fruits and vegetable products including: ➢ air (e.g. natural convection, forced convection and spray chilling) ➢ air freezing ➢ contact freezing ➢ cryogenic (e.g. gaseous, sold and liquid - liquid nitrogen and solid carbon dioxide) ➢ cryogenic freezing ➢ direct contact (e.g. plate freezing and conduction) ➢ direct freezing systems ➢ liquid immersion (e.g. chilled water or glycol solution) • impact of chilling or chilling rates and freezing or freezing rates on quality, production and storage of meat and meat products, dairy, fruits and vegetable products • qualities of humidity including changes in evaporation, pH levels, saturation humidity, saturation vapor pressure • thermal properties of meat and meat products, dairy, fruits and vegetable products and the implications for products quality • relevant OHS and workplace requirements • relevant food safety requirements and reporting responsibilities

	• identify enterprise requirements for refrigeration system including evaluating requirements for specialist personnel and expertise for management and maintenance of refrigeration system; and evaluating different methods of chilling and freezing for cost, efficiency and impact on product quality • hygiene and sanitation requirements for operation, cleaning and maintenance of cold chain systems • processes and methods for chilling and freezing meat and meat products dairy, fruits and vegetable products and their impact on product quality, food safety and tenderness • relevant regulatory requirements including food safety regulations and the implications for the management of the enterprise refrigeration or cold chain systems • OHS requirements related to the safe handling of refrigerants and safety in controlled atmosphere and confined spaces • main elements of the compression cycle (compressor, evaporator, condenser, refrigerant) used in refrigeration
Underpinning Skills	Demonstrate skills to: • assess requirements for enterprise refrigeration or cold chain systems based on enterprise goals, directions and forecasts, detailed product knowledge and regulatory requirements • apply calculation skills and budget principles to refrigeration costs • apply relevant communication and mathematical skills and processes including, as appropriate: ➢ assertiveness, persuasion and negotiation skills ➢ face-to-face, technological and electronic methods ➢ communicating in sensitive, conflictive, collaborative and supportive environments ➢ analyzing and presenting complex concepts, technical information, mathematical information and other data in simple or complex formats ➢ complex actual and hypothetical technical and financial modeling, calculations, interpretation or analysis • develop and maintain the operating system • prepare manuals and procedures for the operation of refrigeration systems, chillers and freezers according to hygiene, safety, quality and customer requirements and determine corrective actions for systems variations and non-conformances • identify key personnel for the resolution and communication of systems problems and failures

	• maintain currency of knowledge through independent research or professional development • maintain the quality of products in the cold chain by monitoring chillers or freezers and interpreting refrigeration data to maintain appropriate temperature or humidity for product types and quantities • manage maintenance of enterprise refrigeration systems including the negotiation and preparation of maintenance schedules; monitoring repairs; conformance with regulatory and quality requirements; and replacement requirements • manage refrigeration costs by monitoring the costs of refrigeration including internal or external service models, maintenance costs, lost time costs, product losses and energy costs, minimizing energy costs • monitor and report system performance including setting performance standards and measures for refrigeration system, consistent with enterprise goals and products, analyzing performance information and making recommendations for systems improvement for inclusion in enterprise forward planning • operate refrigeration or cold chain systems efficiently including identifying and implementing strategies for reducing heat load in enterprise chiller or freezer, minimizing energy costs, maximizing availability and minimizing down time, maintaining temperatures according to quality and food safety requirements • prepare safety procedures for chillers or refrigeration systems including emergency plans and procedures for incidents and accidents associated with refrigerants (leaks and spills) and procedures for the safe and efficient operation of equipment (e.g. forklifts and lights) in chillers and freezers • take action to improve own work practice as a result of self-evaluation, feedback from others or in response to changed work practices or technology • utilize information and communications technology including statistical and modeling software for research, data collection and analysis, and reporting
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Evaluate Sampling Plans in Relation to Food Industry Standards**
Unit Code	**IND FPM5 10 0613**
Unit Descriptor	This unit covers the skills and knowledge required to interpret, apply and evaluate a sampling plan in relation to food industry standards. This unit applies to food science and technology personnel who have roles in product design, quality assurance and production management. The unit typically applies to staff that have responsibility for maintaining product safety, quality and efficiency in food production through the sampling and testing of ingredients and product. The unit can apply to all sectors of food production including general food production, meat and seafood industries. The unit includes using knowledge of food science and processes to determine the required food safety and quality parameters, and the product sampling regime required for testing that parameters and standards have been met. Depending on the workplace application, liaison may be required with engineering and maintenance specialists.

Elements	Performance criteria
1. Identify the concept of sampling.	1.1 The basis of selection of an appropriate sample size is established. 1.2 The Acceptable Quality Level (AQL) is identified, in reference to sampling 1.3 The Operating Characteristic (OC) Curve is identified, in reference to sampling. 1.4 Single/double sampling and its uses in the food manufacturing industry are assessed. 1.5 Sampling tables are interpreted.
2. Interpret, apply and evaluate a sampling plan.	2.1 Appropriate sample size is identified. 2.2 Appropriate Acceptable Quality Limit (AQL) is identified. 2.3 Relevant sampling table is selected. 2.4 Results are interpreted.

Variable	Range
Regulations	• Ethiopian and international standards • Acts of Parliament

	• Legislative requirements are typically reflected in procedures and specifications. Legislation relevant to this industry includes the Food Standards Code including labeling, weights and measures legislation and legislation covering food safety, environmental management, occupational health and safety, anti-discrimination and equal opportunity.
Sampling requirements	Sampling requirements may include a range of sampling plans which apply to organizational, plant or field sites; different products or materials; a range of sampling points.
Sampling tools and equipment	Sampling tools and equipment may include personal protective equipment, sampling frames, sampling tubes, weighted sample bottles, variety of sterile containers, preservatives, automatic samplers, timers, refrigerated samples, composite and discrete samplers.

Evidence Guide	
Critical Aspects of Competence	must include evidence of the ability to: • establish an appropriate sample size, • interpret sampling tables and analyze the results of sampling.
Underpinning Knowledge and Attitudes	Competency includes the ability to apply and explain: • acceptable Quality Limits • operating Characteristics Curve • single, double, sequential and multiple sampling plans • sampling tables
Underpinning Skills	Demonstrates skills to: • establish the basis of selection of an appropriate sample size. • identify the Acceptable Quality Level (AQL) and the Operating Characteristic (OC) Curve. • assess single and double sampling and their uses in the food manufacturing industry. • interpret, apply and evaluate a sampling plan
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Manage Environmental Impacts of Food Processing Operations**
Unit Code	**IND FPM5 11 0613**
Unit Descriptor	This unit covers the skills and knowledge required to assess the potential impacts of enterprise operations on the environment and implement cost effective strategies. Management of environmental impact is a priority across all sectors of the industry and the industry has made a considerable investment in developing best practice systems for the management and minimization of environmental impact. The scope of the unit includes water quality, usage and waste, air quality, emissions, noise, odor, and the minimization and disposal of solid wastes. This unit is suitable for managers with responsibility for environment matters and for plant engineers, production managers, chiller managers, quality managers working in a meat industry context. At this level individuals exercise considerable autonomy, responsibility and accountability within enterprise structures and are required to make primary contributions to the values, goals and operations of the enterprise.

Elements	Performance criteria
1. Determine environment management strategy requirements	1.1. Enterprise's ethical, community and legal obligations for environmental management are ascertained. 1.2. Enterprise operations are examined to identify potential environmental impacts. 1.3. Competitive and economic advantages and disadvantages of ***environmental management strategies*** are analyzed.
2. Develop enterprise commitment to environmental management	2.1. Management commitment is obtained and enterprise environmental management policy formulated. 2.2. Agreed environmental management strategies are built into enterprise planning, operating systems and review processes. 2.3. Consultative processes are developed to resolve environmental issues and problems. 2.4. Environmental management roles and responsibilities are incorporated into job functions, position descriptions and Standard Operating Procedures (SOPs). 2.5. Communication and training strategies to inform and support stakeholder commitment are developed and implemented.

3. Prepare environmental management strategy	3.1. Enterprise requirements for expert assistance and advice are identified. 3.2. Environmental risks are identified and evaluated. 3.3. Requirements of ***environmental management systems*** are determined. 3.4. Alternative environmental management strategies and systems are evaluated for efficiency, effectiveness and sustainability, according to enterprise requirements and regulatory compliance. 3.5. Opportunities for minimizing ***environmental impact*** and maximizing commercial value of waste or waste treatment by-products are identified. 3.6. Resource requirements are calculated and included in enterprise planning processes. 3.7. Performance criteria for environmental management are developed.
4. Implement and monitor environmental management strategies and systems	4.1. Licenses, permits, schedules and agreements are negotiated with regulatory requirements. 4.2. Environment and waste management policies and responsibilities are communicated to stakeholders. 4.3. Environmental and waste management systems are selected, developed, implemented and integrated into operational systems. 4.4. Monitoring, reporting and validation procedures are developed. 4.5. Corrective action strategies and contingency plans are prepared. 4.6. Verification procedures are established. 4.7. Causes of non-compliance are investigated and control measures developed. 4.8. Systems are reviewed to reflect changes in technology, regulations and operational performance.
5. Review environmental management policies, strategies and systems	5.1. Continuous review and improvement processes, including consultation with stakeholders, are established. 5.2. Performance information is assessed and analyzed against specified criteria and standards to identify areas for improvement.

	5.3. Conclusions and recommendations are analyzed and included in enterprise planning and improvement processes.
6. Manage community relations	6.1. Environmental impact statements are prepared to address community, environmental and public health concerns and ***regulatory requirements***. 6.2. Interactions with environmental authorities and agencies are conducted openly, positively and ethically. 6.3. Opportunities to promote the enterprise as a good corporate citizen in environmental management are identified and utilized. 6.4. Enterprise measurement and logging of environmental impacts is maintained, analyzed and reported to stakeholders. 6.5. Community complaints are dealt with promptly, openly and courteously.

Variable	**Range**
Environmental management strategies	may include: • alternative energy sources and configurations • further processing of waste for commercial purposes • minimization strategies (e.g. plant, technology and equipment design and replacement, systems review, process and work flow redesign) • recycling, reuse and recovery of liquid and solid waste.
Environmental management systems	may include: • consultation requirements • qualitative assessment techniques • sampling and measurement schedules, methods and requirements • sustainability targets.
Environmental impacts	may include: • air pollution (e.g. odor, noise, ozone depletion and contamination) • soil degradation (e.g. solid and liquid waste) • water pollution (e.g. effluent and liquid waste, and solid waste).
Regulatory requirements	may include: • animal welfare • Environmental Management Systems - Requirements with Guidance for Use • Environmental Management Systems - Life Cycle Assessment - Principles and Framework

	• Guidelines for Quality and/or Environmental Management Systems Auditing • Ethiopian covenants and codes of practice on packaging disposal • commercial law, including fair trading and trade practices • consumer law • corporate law, including registration, licensing and financial reporting • environmental and waste management • environmental protection, conservation and sustainability requirements • Export Control Act • industrial awards, agreements • licensing requirements and conditions (e.g. export meat order requirements for potable water and food safety) • planning permission, including solid and liquid waste disposal, odors, plant noise, and impact of road transport/traffic (e.g. noise) • pollution control licenses • public health requirements • relevant regulations, such as state and territory regulations regarding meat processing • taxation • United Nations Educational, Scientific and Cultural Organization (UNESCO) and World Health Organization (WHO) covenants and agreements.
Stakeholders and external agencies	may include: • community groups, including neighbors, residents, environment and conservation groups • company owners, directors, shareholders and financiers • customers and consumers • emergency services • employees • enterprise departments, divisions and sections • environment protection authorities and agencies • governments and government agencies (federal, state, territory and local) • industry groups and associations, including employee, employer, professional and technical groups • regulatory authorities.
Mathematical skills	may relate to: • complex actual and hypothetical • technical and financial modeling • calculations

	• interpretation • analysis. • complex actual and hypothetical mathematical information, such as: ➢ product and product quality ➢ financial operations ➢ personnel ➢ operations ➢ sales and turnover ➢ exports.
Communication skills	may: • be with culturally, ethnically and socially diverse individuals and groups • involve preparation of reports which may be complex, contain information from a range of technical sources and include mathematical and graphic information and data • involve reading and interpreting workplace documentation • occur in a variety of sensitive, conflictive, collaborative and supportive environments • be formal or informal and involve face to face and technological/electronic methods • require analysis and presentation of complex concepts, technical information, mathematical information and other data in simple or complex formats • require persuasion, negotiation and assertiveness skills.
Wastewater disposal options	may include: • biological treatments • disposal to surface waters • land disposal • primary and secondary treatment process • screening, flotation and evaporation • sewer disposal • wastewater recycling.
Measures to minimize nutrients and other contaminants in water	may include: • dry cleaning before wash down • improved manual plug change over for blood pit plug • improved screening/filters in treatment plans and floor drains screens • pondage, purification and filtering • primary screening.
Air pollution	may include: • noise (e.g. on site operations and transport) • odors related to production and transport on lairage of large animals • vapors, gases (e.g. greenhouse gases), solids fallout.

Odor treatment processes	may be physical, chemical or biological and include: • activated carbon • biofilters and bioscrubbers • chemical oxidation (e.g. wet chemical scrubbing or ozonisation) • dispersion (e.g. extraction hoods and dispersion stacks) • thermal oxidation (e.g. incineration).
Solid waste	may include: • crop residue, animal waste (e.g. non-commercial value hides and manure) • meat and meat products (e.g. fat, bone and flesh), dairy fruits and vegetables products • packaging materials (e.g. cardboard cartons, paper/plastic liners, vacuum packs and binding tapes) • refuse from non-processing operations (e.g. canteen, offices and amenities) • small goods manufacturing, processing, rendering and further processing wastes (e.g. fat, meat and meat product trimmings, rejects and returns, paunch manure, waste from fly ash boilers, oil and grease trap waste, and sludge) • solids suspended in effluent. Methods of managing solid waste may include: • composting • filtration, effluent treatment/settling ponds • identification of alternative products (e.g. biodegradable packaging) • incineration.
OHS requirements	may include: • enterprise OHS policies, procedures and programs • hygiene and sanitation requirements • OHS legal requirements • Personal Protective Equipment (PPE) which may include: ➢ coats and aprons ➢ ear plugs or muffs ➢ eye and facial protection ➢ head-wear ➢ lifting assistance ➢ protective boot covers ➢ protective hand and arm covering ➢ protective head and hair covering ➢ uniforms ➢ waterproof clothing ➢ work, safety or waterproof footwear • requirements set out in standards and codes of practice.

Workplace requirements	may include: • enterprise-specific requirements • OHS requirements • Quality Assurance (QA) requirements • Standard Operating Procedures (SOPs) • the ability to perform the task to production requirements • work instructions.
Benchmarking	may include working with: • companies from other industries • internal departments • international or national industry standards • other companies or sites within the industry.
Reports	may: • include analysis and response to complaints • include evaluation of alternative environmental management strategies and controls • include financial reports (e.g. cost/benefit analyses and budget reports) • include performance information, audit reports and environment management reports to meet licensing requirements • be complex • contain information from a range of technical sources and include mathematical and graphic information and data • need to be presented according to legal and enterprise requirements.
Expert advice and assistance	may be sought from: • environmental engineers • environmental agencies and government departments.

Evidence Guide	
Critical aspects of Competence	Must demonstrate knowledge and skills competence to: • demonstrate through sustained performance over time, at an appropriate level of responsibility and authority under typical operating and production conditions for the enterprise.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • potential costs of prevention, assessment and control of environmental impact • customer and consumer, including importing country, requirements for effective environmental management and the implications for enterprise operations • enterprise requirements for expert advice, assistance and support • major air, water and solid waste environmental impacts generated by the meat industry

	• relevant environmental authorities, their jurisdictions, powers and the implications for enterprise operations.
Underpinning Skills	Demonstrate skills to: • analyze and interpret current regulatory requirements, including local, state, national and international, for environmental management, such as environmental tolerance levels, and explain the implication for enterprise operations • assess viability of gaining commercial value from waste, including the determination of commercial quantities, costs, returns and payback periods • apply relevant mathematical and communication skills • communicate effectively with internal and external personnel with diverse roles and cultures • comply with regulatory requirements for managing enterprise environmental impact, including negotiation of agreements, plans, permits and licenses with relevant environmental management authorities, confinement of environmental impacts within permissible limits and preparation of the enterprise for external audit where specified • consult with internal/external stakeholders and external agencies to prepare contingency plans and emergency response procedures for environmental incidents • develop individual and team capacity to achieve enterprise management policies and goals, including clear communication of individual and team responsibilities for minimizing environmental impact, development of consultative processes and strategies to identify and resolve environmental issues, and identification and provision of appropriate training programs • develop procedures for responding to community complaints and concerns • evaluate and recommend environmental management systems to meet enterprise needs, including the identification and audit of enterprise creation of waste and environmental impacts and evaluation of control and treatment systems suitable for enterprise operations, comparative costs, savings and minimization of environmental impacts, such as wastewater disposal, measures to minimize nutrients and other contaminants in water, e.g. strategies to control air pollution, odor treatment processes and managing solid waste • identify and apply relevant Occupational Health and Safety (OHS), regulatory and workplace requirements

	• implement enterprise environmental management systems to minimize environmental impact, including the establishment of monitoring and testing regimes and record keeping systems; development of procedures for identifying, reporting and analyzing the causes of environment non-conformances and incidents; development of control measures to prevent recurrence of environmental incidents, hazardous events and non-conformances • monitor performance of the enterprise environmental management system, including the identification of performance standards based on industry best practice; collection and analysis of qualitative and quantitative performance data; benchmarking; assessment of performance against standards and recommendations for improvement • prepare and update enterprise environmental impact statements and environment management plans • prepare information about the enterprise's environmental management strategy and progress for release to the public, consistent with enterprise ethical standards and regulatory requirements • prepare reports and recommendations for senior management, using analysis of complex information and language, and presentation styles appropriate for the purpose • present reports according to legal and enterprise requirements • take action to improve own work practice as a result of feedback from others, self-evaluation, or in response to changed work practices and requirements or technologies • utilize effective communication, negotiation and problem-solving skills in interactions with all stakeholders, including environmental authorities and agencies and community representatives • utilize information and communications technology for research, data collection and analysis and reporting, including the use of statistical and modeling software, where available.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Manage and Evaluate New Product Trials**
Unit Code	**IND FPM5 12 0613**
Unit Descriptor	This unit of competency covers the skills and knowledge required to plan, monitor and evaluate the trialing of new products in production. This unit applies to the management of the trial in a production environment. New product trials typically involve working with a team of area specialists including product development and engineering experts.

Elements	Performance criteria
1. Establish trial parameters	1.1. New product specifications are defined. 1.2. Production resource requirements are identified. 1.3. Project budget and timeline are established. 1.4. Trial size is appropriate to provide reliable process and production information.
2. Prepare for the new product trial	2.1. New product recipe/formula is scaled to suit trial production. 2.2. Raw materials/ingredients, packaging components and consumables are identified and confirmed to meet trial requirements. 2.3. Production equipment is identified, available and suitable for use. 2.4. Production personnel are available and have the required competencies to operate the trial process. 2.5. Environmental, food safety and health and safety hazards of the trial process are identified and appropriate control methods determined. 2.6. Trial documentation format and procedures are agreed. 2.7. The trial schedule timeline is established and barriers/constraints to ***achieving schedule*** are identified, monitored and addressed.
3. Develop and communicate information on the trial process	3.1. Personnel in related work areas and functions are kept informed of trial status and progress. 3.2. Operators directly participating in the trial are advised of trial parameters, roles and responsibilities. 3.3. Advice on product specifications and operating procedures is communicated to the project team.

4. Monitor trial progress	4.1. The ***trial process*** is monitored to identify actual and potential barriers to achieving the schedule. 4.2. Trial product is produced within specification. 4.3. Out-of-specification or unacceptable outcomes are identified and investigated. 4.4. Unusual or atypical conditions that could affect the achievement of the schedule are identified. 4.5. Modifications are made and reported as required according to trial arrangements.
5. Evaluate trial outcome	5.1. Trial objectives are identified. 5.2. Resource allocations are assessed against plan. 5.3. Trial product is assessed against specifications. 5.4. Production parameters/operating conditions are compared with scheduled performance. 5.5. Significant variances are identified and investigated. 5.6. Improvement opportunities are identified and reported.

Variable	**Range**
Achieving schedule	involves meeting product specifications within given resource allocations and timelines
Trial processes	typically involve a multi-disciplinary team
Trial conditions	are consistent with company policies and procedures, regulatory and licensing requirements, legislative requirements, and industrial awards and agreements and takes account of OHS and environmental impact of scheduling arrangements
Factors to be taken into account in planning and monitoring the trial process	may include but are not limited to: • product specifications • raw materials/ingredients, packaging components and consumables • storage capacities • production capacity, configuration and availability • processing parameters • labor requirements and availability • trial production targets/timelines and related OHS, food safety and environmental hazards and controls

Evidence Guide	
Critical aspects of Competence	Must demonstrate knowledge and skills competence to: • establish parameters and conditions and requirements for product trial

	• establish, document and communicate the procedure for the trial • monitor and evaluate trial outcomes against objectives and set conditions • document all aspects of trial to ensure repeatability and collection of evidence.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • trial project parameters, constraints and criteria for evaluating outcomes • sources of expertise available to support the trial process • process documentation procedures and requirements to ensure that the process meets trial outcomes and is consistent with legislative and company policy objectives, including relevant legislation • factors to be taken into account in planning and monitoring the trial process • proposed formulations and preferred processing method to assess constraints and opportunities for improvement, including equipment capability, typical materials usage rates to achieve a given production outcome, and area experts in related roles, such as product development and engineering, where required, to provide additional expertise • systems and procedures for managing OHS, environmental management and food safety through the trial process consistent with the hierarchy of control • investigation and process improvement techniques and processes, including techniques to collect and evaluate trial data • recording systems and requirements
Underpinning Skills	Demonstrate skills to: • identify trial objectives and information requirements, including clarifying reporting requirements and formats • identify trial participants, including clarifying roles, responsibilities and levels of authority (participants may include technical experts, related functions such as planning, quality assurance and engineering and trial process operators) • establish and maintain effective communication processes to meet the information requirements of all stakeholders • assess final product specifications against recipe/formulation and processing method to confirm capability • identify production targets and timeframes against equipment and process capability

	• confirm availability of resources to meet trial schedule, such as stock levels, equipment availability and capacity, personnel and storage capacity • identify competencies required by trial operators and confirm availability, such as arranging training prior to trial • confirm that all hazards have been identified and appropriate methods of control are in place to control environmental, food safety and OHS hazards (control methods should be selected consistent with the control hierarchy) • establish a detailed trial schedule to manage the process • ensure that relevant documentation is available in appropriate formats, including product specifications/recipe formulations, process parameters and operating procedures • monitor trial progress against detailed plan to identify variances and identify factors that may need to be adjusted to achieve schedule, which may require consultation with operators and other experts • investigate and report on causes of variation and identify opportunities for improvement, such as participating in/facilitating problem solving processes • use project planning, scheduling and monitoring skills, such as use of relevant software applications • collect and evaluate trial information, such as participating in/facilitating an evaluation team • report on trial outcomes and related improvement opportunities to meet reporting requirements of the trial process • use communication skills to interpret and complete work information to support operations of work team or area • demonstrate and support cooperative work practices within a culturally diverse workforce
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Manage Operational Plan**
Unit Code	**IND FPM5 13 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to develop and monitor implementation of the operational plan to provide efficient and effective workplace practices within the organization's productivity and profitability plans. This unit applies to people who manage the work of others and operate within the parameters of a broader strategic and/or business plan. The task of the manager at this level is to develop and implement an operational plan to ensure that the objectives and strategies outlined in the strategic and/or business plan are met by work teams. However in some larger organizations operational plans may be developed by a strategic planning unit. At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgment, using a range of problem solving and decision making strategies.

Elements	Performance criteria
1. Develop operational plan	1.1. ***Resource requirements*** are researched, analyzed and documented and an operational plan is developed in consultation with ***relevant personnel***, ***colleagues and specialist resource managers*****.** 1.2. ***Consultation processes*** are developed and/or implemented as an integral part of the operational planning process. 1.3. Ensure details of the ***operational plan*** include the development of ***key performance indicators*** to measure organizational performance. 1.4. ***Contingency plans*** are developed and implemented at appropriate stages of operational planning. 1.5. Ensure the development and presentation of proposals for resource requirements is supported by a variety of information sources and seeks specialist advice as required. 1.6. Approval for plan is obtained from relevant parties and understanding among work teams involved is ensured.

2. Plan and manage resource acquisition	2.1. Strategies are developed and implemented to ensure that employees are recruited and/or inducted within the organization's human resources management policies and practices. 2.2. Strategies are developed and implemented to ensure that physical resources and services are acquired in accordance with the ***organization's policies***, ***practices and procedures***.
3. Monitor and review operational performance	3.1. Performance systems and processes are developed, monitored and reviewed to assess progress in achieving profit and productivity plans and targets. 3.2. Budget and actual financial information is analyzed and interpreted to monitor and review profit and productivity performance. 3.3. Areas of underperformance and recommend solutions are identified, and prompt action is taken to rectify the situation 3.4. Systems are planned and implemented to ensure that mentoring and coaching are provided to support individuals and teams to effectively, economically and safely use resources. 3.5. Recommendations for variations are negotiated to operational plans and gain approval from ***designated persons***/***groups***. 3.6. Systems are developed and implemented to ensure that procedures and records associated with documenting performance are managed in accordance with organizational requirements.

Variable	**Range**
Resource requirements	may include: • goods and services to be purchased and ordered • human, physical and financial resources - both current and projected • stock requirements and requisitions
Relevant personnel**,** colleagues and specialist resource managers	may include: • employees at the same level or more senior managers • managers • occupational health and safety committee/s and other people with specialist responsibilities • supervisors • union or employee representatives

Consultation processes	may refer to: • email/intranet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation • meetings, interviews, brainstorming sessions
Operational plans	may also be termed: • action plans • annual plans • management plans • tactical plans
Key performance indicators	may refer to: • measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements
Contingency plans	may include: • contracting out or outsourcing human resources and other functions or tasks • diversification of outcomes • finding cheaper or lower quality raw materials and consumables • increasing sales or production • recycling and re-using • rental, hire purchase or alternative means of procurement of required materials, equipment and stock • restructuring of organization to reduce labor costs • risk identification, assessment and management processes • seeking further funding • strategies for reducing costs, wastage, stock or consumables and succession planning
Organization's policies, practices and procedures	may include: • organizational culture • organizational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • Standard Operating Procedures • undocumented practices in line with organizational operations
Designated persons/groups	may include: • groups designated in workplace policies and procedures • managers or supervisors whose roles and responsibilities include decision making on operations

	• other stakeholders such as Board members • other work groups or teams whose work will be affected by recommendations for variations

Evidence Guide	
Critical aspects of Competence	Must demonstrate knowledge and skills competence to: • development of an operational plan with details of how it will be implemented and monitored • knowledge of models and methods for operational plans.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • models and methods for operational plans • budgeting processes • alternative approaches to improving resource usage and eliminating resource inefficiencies and waste.
Underpinning Skills	Demonstrate skills to: • literacy skills to access and use workplace information and to write a succinct and practical plan • technology skills to use software to produce and monitor the plan against performance indicators • planning and organizational skills • coaching skills to work with people with poor performance • numeracy skills to allocate and manage financial resources.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Manage Project Quality**
Unit Code	**IND FPM5 14 0613**
Unit Descriptor	This unit specifies the outcomes required to manage quality within projects. It covers determining quality requirements, implementing quality assurance processes, and using review and evaluation to make quality improvements in current and future projects.

Elements	Performance criteria
1. Determine quality requirements	1.1 ***Quality objectives***, standards and levels are determined, with input from stakeholders and guidance of a higher project authority, to establish the basis for quality outcomes and a ***quality management plan***. 1.2 Established ***quality management methods, techniques and tools*** are selected and used to determine preferred mix of quality, capability, cost and time. 1.3 Quality criteria are identified, agreed with a higher project authority and communicated to stakeholders to ensure clarity of understanding and achievement of quality and overall project objectives. 1.4 Agreed quality requirements are included in the project plan and implemented as basis for performance measurement.
2. Implement quality assurance	2.1 Results of project activities and product performance are measured and documented throughout the project life cycle to determine compliance with agreed quality standards. 2.2 Causes of unsatisfactory results are identified, in consultation with the client, and appropriate actions are recommended to a higher project authority to enable continuous improvement in quality outcomes. 2.3 Inspections of quality processes and ***quality control*** results are conducted to determine compliance of quality standards to overall quality objectives. 2.4 A quality management system is maintained to enable effective recording and communication of quality issues and outcomes to a higher project authority and stakeholders.
3. Implement project quality improvements	3.1 Processes are reviewed and agreed changes implemented continually throughout the project life cycle to ensure continuous improvement to quality. 3.2 Project outcomes are reviewed against performance criteria

	to determine the effectiveness of quality management processes and procedures. 3.3 Lessons learned and recommended ***improvements*** are identified, documented and passed on to a higher project authority for application in future projects.

Variable	**Range**
Quality objectives	May include but not limited to: • requirements from the client and other stakeholders • requirements from a higher project authority • negotiated trade-offs between cost, schedule and performance • those quality aspects which may impact on customer satisfaction
Quality management plan	May include but not limited to: • established processes • authorizations and responsibilities for quality control • quality assurance and continuous improvement
Quality management methods, techniques and tools	May include but not limited to: • brainstorming • benchmarking • charting processes • ranking candidates • defining control • undertaking benefit/cost analysis • processes that limit and/or indicate variation • control charts • flowcharts • histograms • pareto charts • scatter gram and run charts
Quality control	May include but not limited to: • monitoring conformance with specifications • recommending ways to eliminate causes of unsatisfactory • performance of products or processes • monitoring of regular inspections by internal or external agents
Improvements	May include but not limited to: • formal practices, such as total quality management or continuous improvement • improvement by less formal processes which enhance both the product quality and processes of the project, for example client surveys to determine client satisfaction with project team performance

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • lists of quality objectives, standards, levels and measurement criteria • records of inspections, recommended rectification actions and quality outcomes • management of quality management system and quality management plans • application of quality control, quality assurance and continuous improvement processes • records of quality reviews • lists of lessons learned and recommended improvements Processes that could be used as evidence include: • how quality requirements and outcomes were determined for projects • how quality tools were selected for use in projects • how team members were managed throughout projects with respect to quality within the project • how quality was managed throughout projects • how problems and issues with respect to quality and arising during projects were identified and addressed • how projects were reviewed with respect to quality management • how improvements to quality management of projects have been acted upon
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • the principles of project quality management and their application • acceptance of responsibilities for project quality management • use of quality management systems and standards • the place of quality management in the context of the project life cycle • appropriate project quality management methodologies; and their capabilities, limitations, applicability and contribution to project outcomes • attributes: ➢ analytical ➢ attention to detail ➢ able to maintain an overview ➢ communicative ➢ positive leadership

Underpinning Skills	Demonstrate skills of: • ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities • project management • quality management • planning and organizing • communication and negotiation • problem-solving • leadership and personnel management • monitoring and review skills
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Facilitate and Capitalize on Change and Innovation**
Unit Code	**IND FPM5 15 0613**
Unit Descriptor	This unit specifies the outcomes required to plan and manage the introduction and facilitation of change; particular emphasis is on the development of creative and flexible approaches, and on managing emerging opportunities and challenges.

Elements	Performance criteria
1. Participate in planning the introduction and facilitation of change	1.1 ***Manager*** contributes effectively to the organization's planning processes to introduce and facilitate change. 1.2 Plans are made to introduce change in consultation with ***appropriate stakeholders***. 1.3 Organization's objectives and plans are communicated effectively to introduce change to individuals and teams.
2. Develop creative and flexible approaches and solutions	2.1 Variety of approaches are identified and analyzed to manage workplace issues and problems. 2.2 ***Risks*** are identified and assessed, and action initiated to manage these to achieve a recognized benefit or advantage to the organization. 2.3 Workplace is managed in a way which promotes the development of innovative approaches and outcomes. 2.4 Creative and responsive approaches to resource management improve productivity and services, and/or reduce costs.
3. Manage emerging challenges and opportunities	3.1 Individuals and teams are supported to respond effectively and efficiently to changes in the organization's goals, plans and priorities. 3.2 Coaching and mentoring are made to assist individuals and teams to develop competencies to handle change efficiently and effectively. 3.3 Opportunities are identified and taken as appropriate, to make adjustments and to respond to the changing needs of customers and the organization. 3.4 ***Information needs*** of individuals and teams are anticipated and facilitated as part of change implementation and management. 3.5 Recommendations for improving the methods and techniques to manage change are identified, evaluated and negotiated with appropriate individuals and groups.

Variable	Range
Manager	a person with frontline management roles and responsibilities, regardless of the title of their position
Appropriate stakeholders	May include but not limited to: • organization directors and other relevant managers • teams and individual employees who are both directly and indirectly involved in the proposed change • union/employee representatives or groups • OHS committees • other people with specialist responsibilities • external stakeholders where appropriate - such as clients, suppliers, industry associations, regulatory and licensing agencies
Risks	May include but not limited to: • any event, process or action that may result in goals and objectives of the organization not being met • any adverse impact on individuals or the organization • various risks identified in a risk management process
Information needs	May include but not limited to: • new and emerging workplace issues • implications for current work roles and practices including training and development • changes relative to workplace legislation, such as OHS, workplace data such as productivity, inputs/outputs and future projections • planning documents • reports • market trend data • scenario plans • customer/competitor data

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • Planning the introduction and facilitation of change • Developing creative and flexible approaches and solutions • Managing emerging challenges and opportunities
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • the principles and techniques involved in: • change and innovation management

	• development of strategies and procedures to implement and facilitate change and innovation • use of risk management strategies: identifying hazards, • assessing risks and implementing risk control measures • problem identification and resolution • leadership and mentoring techniques • management of quality customer service delivery • consultation and communication techniques • record keeping and management methods • the sources of change and how they impact • factors which lead/cause resistance to change • approaches to managing workplace issues
Underpinning Skills	Demonstrate skills on: • Communication skills • Planning work • Managing risk
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Establish and Conduct Business Relationships**
Unit Code	**IND FPM5 16 0613**
Unit Descriptor	This unit covers the skills, attitudes and knowledge required to manage business relationship with customers.

Elements	Performance criteria
1. Establish contact with customer	1.1 Welcoming customer environment is maintained. 1.2 Customer is greeted warmly according to enterprise policies and procedures. 1.3 Effective service environment is created through verbal and non-verbal presentation according to enterprise policies and procedures. 1.4 Customer data is maintained to ensure database relevance and currency. 1.5 Information on customers and service history is gathered for analysis. 1.6 ***Opportunities*** to maintain regular contact with customers are identified and taken up.
2. Clarify needs of customer	2.1 Customer needs are determined through questioning and active listening. 2.2 Customer needs are accurately assessed against the products/services of the enterprise. 2.3 Customer details are documented clearly and accurately in required format. 2.4 Negotiations are conducted in a business-like and professional manner. 2.5 Maximize benefits for all parties in the negotiation through use of established ***negotiation techniques*** and in the context of establishing long term relationships. 2.6 The results of negotiations are communicated to appropriate colleagues and stakeholders within appropriate timeframes.
3. Provide information and advice	3.1 Features and benefits of products/services provided by the enterprise are described / recommended to meet customer needs. 3.2 Information is provided to satisfy customer needs. 3.3 Alternative sources of information/advice are discussed with the customer.

4. Foster and maintain business relationships	4.1 Pro-actively seek, review and act upon information needed to maintain sound business relationships. 4.2 Agreements are honored within the scope of individual responsibility. 4.3 Adjustments to agreements are made in consultation with the customer and share information with appropriate colleagues. 4.4 Nurture relationships through regular contact and use of effective interpersonal and communication styles.

Variable	**Range**
Opportunities to maintain regular contact with customers	May include but not limited to: • informal social occasions • industry functions • association membership • co-operative promotions • program of regular telephone contact
Negotiation techniques	May include but not limited to: • identification of goals, limits • clarification of needs of all parties • identifying points of agreement and points of difference • preparatory research of facts • active listening and questioning • non-verbal communication techniques • appropriate language • bargaining • developing options • confirming agreements • appropriate cultural behavior

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • consistently applying enterprise policies and procedures and industry codes of practice in regard to customer service • providing a quality service environment by treating customers in a courteous and professional manner through all stages of the procedure • using effective questioning/active listening and observation skills to identify customer needs • communicating effectively with others involved in or affected by the work • maintaining relevant and current customer databases in accordance with enterprise policies and procedures

	• ability to build and maintain relationships to achieve successful business outcomes
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Operational knowledge of enterprise policies and procedures in regard to: ➢ customer service ➢ dealing with difficult customers ➢ maintenance of customer databases ➢ allocated duties/responsibilities ➢ General knowledge of the range of enterprise merchandise and services, location of telephone extensions and departments/sections • Basic operational knowledge of legislation and statutory requirements, including consumer law, trade practices and fair trading legislation • Basic operational knowledge of industry/workplace codes of practice in relation to customer service • negotiation and communication techniques appropriate to negotiations that may be of significant commercial value
Underpinning Skills	Demonstrate skills to: • Use workplace technology related to use of customer database • Collect, organize and understand information related to collating and analyzing customer information to identify needs • Communicate ideas and information • Plan and organize activities concerning information for database entries • Use mathematical ideas and techniques to plan database cells and size • Establish diagnostic processes which identify and recommend improvements to customer service
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Agro-food Processing Management Level V	
Unit Title	**Manage Continuous Improvement Process (Kaizen)**
Unit Code	**IND FPM5 17 0312**
Unit Descriptor	This unit describes the performance, outcomes, knowledge, attitude and skills required to sustain and develop an environment in which continuous improvement, innovation and learning are promoted, rewarded and managed.

Elements	Performance criteria
1. Diagnose the current status.	1.1 ***Parameters*** used for study current situation are obtained. 1.2 Internal and external environment is analyzed. 1.3 Problems related to targeted environment is recognized and identified. 1.4 Problems regarding to current situation are analyzed. 1.5 Alternatives are generated. 1.6 Best alternatives are selected.
2. Design an effective continuous improvement process (kaizen).	2.1 The values, mission and goals of kaizen management system are clarified. 2.2 The ***kaizen management template*** and a visual management logo full of purpose and meaning are developed. 2.3 A clear action strategy (master and detailed plans) is defined. 2.4 The most effective and proven ***kaizen tools*** are chosen and applied. 2.5 A practical way is identified to involve all employees in ***Gemba activities*** (top, middle and bottom).
3. Develop change capability.	3. 1. Kaizen Promotion Team Structure is developed. 3. 2. The Kaizen Training Plan is defined and started. 3. 3. Supervisors' kaizen capability and habits are developed. 3. 4. Key people are developed in terms of ***Individual leadership capability***.

4. Implement improved processes.	4.1 ***Sustainability/continuous improvement*** are promoted as an essential part of doing business. 4.2 Impacts of change and consequences are addressed for people, and transition plans implemented. 4.3 Objectives, time frames, measures and communication plans are ensured in place to manage implementation. 4.4 Contingency plans are implemented in the event of non-performance. 4.5 Failure is followed-up by prompt investigation and analysis of causes. 4.6 Emerging challenges and opportunities are managed effectively. 4.7 Continuous improvement systems and processes are evaluated regularly. 4.8 Improvements are communicated to all relevant groups and individuals. 4.9 Opportunities are explored for further development of value stream improvement processes.
5. Establish direction and control.	5.1 A ***system audit tool*** is defined and implemented. 5.2 The kaizen management system is deployed across all company levels and functions. 5.3 Results are checked and corrections made. 5.4 ***Standard operating procedures*** are developed and maintained. 5.5 The recruit, training and evaluation systems are improved and ***HR practices*** compensated.

Range	**Variables**
Parameters	May include but not limited to: • Working condition • Resources may include: ➢ Human ➢ Material ➢ Machine • Kaizen elements

Kaizen management template	May include but not limited to: • Visual management board for: ➢ displaying characteristic figures, data and graphics ➢ depicting and controlling processes ➢ identifying and marking sources of risks, setting and standards ➢ displaying company's values and goals of kaizen
Kaizen tools	May include but not limited to: • 5S (a visual workplace management) • 7 QC tools(Cause and Effect Diagram, Check Sheet , Pareto Diagram , Histogram, Scatter Diagram, Control Chart and Flow Chart) • Brainstorming • Basic Industrial Engineering (IE) tools such as time study, motion study, line balancing, work sampling • JIT(JUST IN TIME principles) • MUDA identification and elimination tools • Kanban • Poka-yoke • Takt- time
Gemba activities	May include but not limited to: • Value-adding activities to satisfy the customer • Employee autonomous operations (participating in team to identify nonconformity, propose solutions and implement them autonomously)
Individual leadership capability	May include but not limited to: • Personal and interpersonal skills • Courage • Honour and integrity • Energy and drive • Strategic skills • Operating skills • Organizational positioning skills
Sustainability/continuous improvement	May include but not limited to: • Improvements made by following PDCA (Plan, Do, Check and Act) cycle for: ➢ Improvements in one's own work ➢ Saving in energy, material and other resources ➢ Improvements in the working environment ➢ Improvements in machines and processes ➢ Improvements in jigs and tools ➢ Improvement in office work ➢ Improvements in product quality ➢ Ideas for new products ➢ Customers services and customer relations

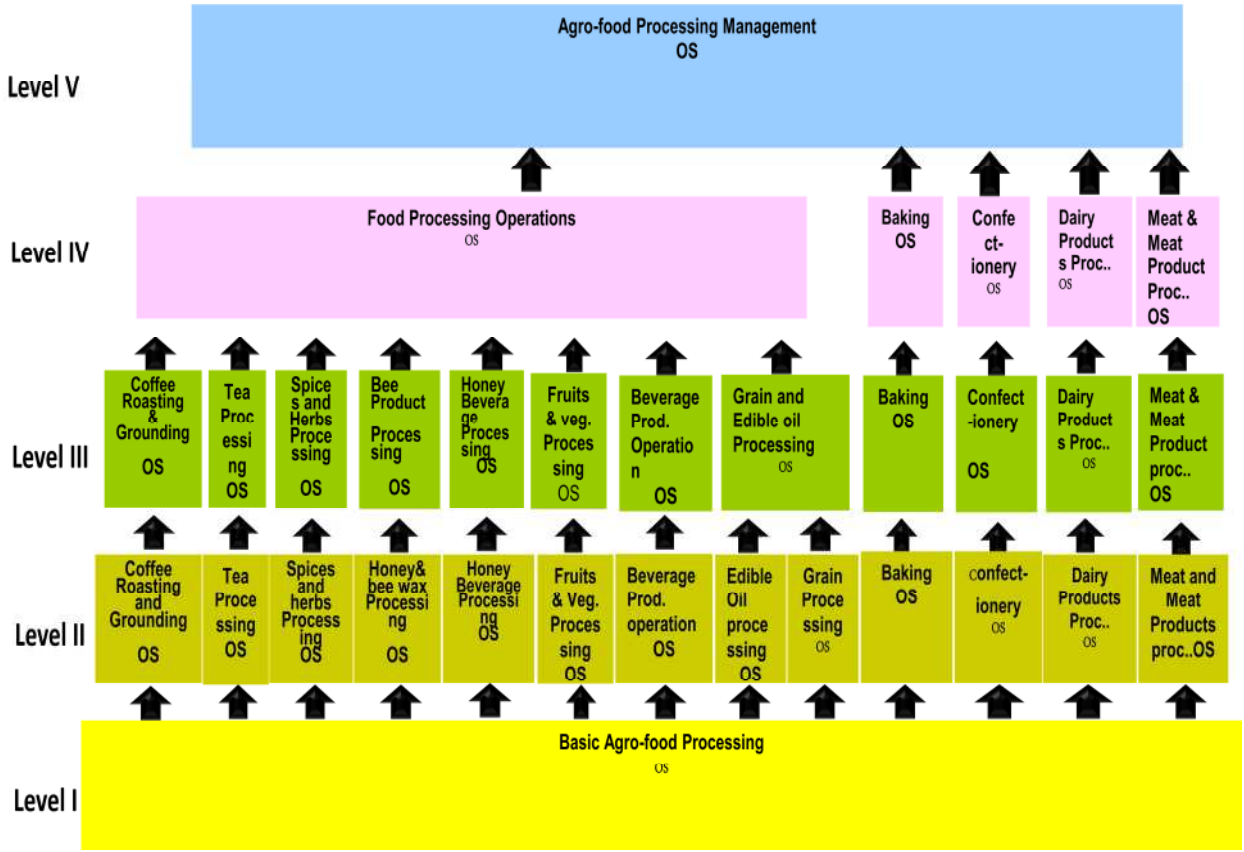
System audit tool	May include but not limited to: • 5S audit • Patrol system • Kaizen board • 5M check lists • Key Performance Indicators (KPIs)
Standard operating procedure	May include but not limited to: • Administrative standards for: ➢ Managing the business ➢ Administration ➢ Personnel Guidelines ➢ Job Descriptions ➢ Guidelines for preparing cost information • Operation standards for: ➢ Describing the way a job is done. ➢ Help realising Quality, cost, delivery. ➢ Addressing the need to satisfy customers. ➢ Using the process that's the best. ➢ Producing work in the most cost effective manner. ➢ Assuring total quality for the customer.
HR practices	May include but not limited to: • Resources may include: ➢ Recruit and retain high quality people with innovative skills and a good track, record in innovation • HR development is used for: ➢ strategic capability and provide encouragement and facilities for enhancing innovating skills and enhancing the intellectual capital of the organization • Reward will: ➢ Provide financial incentives and rewards and recognition for successful innovation

Evidence Guide	
Critical Aspects of Assessment	Demonstrates skills and knowledge competencies to: • Establish policy and cross-functional goals for kaizen • Deploy and implement goals as directed through policy deployment and cross-functional management. • Realize goals through deployment and audits. • Build systems, procedures, and structures conducive to kaizen. • Use kaizen in functional capabilities. • Introduce Kaizen as a corporate strategy • Provide support and direction between allocating resources • Establish, maintain and upgrade standards.

	• Make employees conscious through training programs. • Assist employees develop skills and tools for problem solving.
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • Quality management and continuous improvement theories • creativity/innovation theories/concepts • competitive systems and practices tools, including: ➢ 5S ➢ JUST IN Time (JIT) ➢ mistake proofing ➢ process mapping ➢ establishing customer pull ➢ setting of KPIs/metrics ➢ SOP ➢ Kaizen elements/targets. ➢ identification and elimination of waste/MUDA ➢ continuous improvement processes including implementation, monitoring and evaluation strategies for a whole organization and its value stream ➢ Difference between breakthrough improvement and continuous improvement ➢ organizational goals, processes and structure ➢ approval processes within organization ➢ methods of determining the impact of a change ➢ customer perception of value ➢ Define, Measure, Analyze, Improve and Control (DMAIC) to sustain process
Underpinning Skills	Demonstrates Skills to: • Use leadership skills to foster a commitment to quality and openness to improvement. • Analyze training needs and implementing training programs • Prepare and maintain quality and audit documentation • Undertake self-directed problem solving and decision-making on issues of a broad and/or highly specialized nature and in highly varied and/or highly specialized contexts • Communicate at all levels in the organization and to audiences of different levels of literacy and numeracy • Analyze current state/situation of the organization. • Analyze individually and collectively the implementation of competitive systems and practices tools in the organization and determining strategies for improved implementation

	• Solve highly varied and highly specialized problems related to competitive systems and practices implementation and continuous improvement to root cause • Negotiate with stakeholders, where required, to obtain information required for implementation and refinement of continuous improvements, including management, unions, employees and members of the community. • Review relevant metrics, including all those measures which might be used to determine the performance of the improvement system, including: ➢ Key Performance Indicators (KPIs) for existing processes ➢ Quality statistics ➢ Delivery timing and quantity statistics ➢ Process/equipment reliability (‘uptime’)
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Sector: Industry
Sub- sector: Agro-food Processing



Acknowledgement

We wish to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies who donated their time and expertise to the development of this occupational standard.

We would like also to express our appreciation to the Staff and Experts of Industry Ministry, Federal TVET Agency and Ministry of Education (MoE) who made the development of this occupational standard possible.

This occupational standard was developed on the date of June 25, 2013 at Debre Zeyit Ethiopian Management Institute.

COMMENT TEMPLATE

The Federal TVET Agency values your feedback of the document.
If you would like someone to personally contact you, please provide the following information:
Name:
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Contact preference: □Phone □E-mail
Please, leave a comment.

Thank you for your time and consideration to complete this. For additional comments, please contact us on:

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