REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

AGRICULTURAL EXTENSION OFFICER

LEVEL 6

TVET CDACC
P.O. BOX 15745-00100
NAIROBI

FOREWORD

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

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution of Kenya 2010 and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

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

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

PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING
MINISTRY OF EDUCATION

PREFACE

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

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

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Agricultural Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for Agricultural Extension Officer. These standards will be the bases for development of competency-based curriculum for Agricultural Extension Level 6.

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

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

CHAIRPERSON,
TVET CDACC

ACKNOWLEDGMENT

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

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to Agricultural Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards.

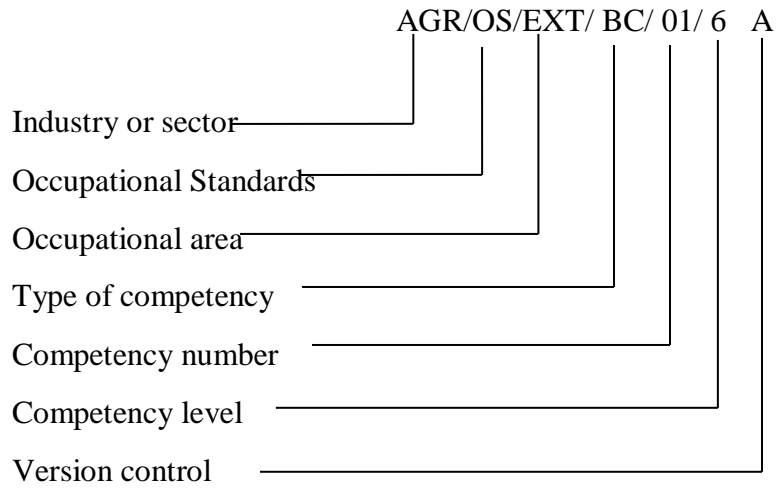I thank all the individuals and organizations who participated in the validation of these Standards.

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

CHAIRPERSON
AGRICULTURAL EXTENSION SECTOR SKILLS ADVISORY COMMITTEE

ABBREVIATION AND ACRONYMS

BC   : Basic Competency

CR   : Core Competency

EMCA   : Environmental Management and Co-ordination Act

ICT   : Information Communication Technology

NEMA   : National Environment Management Authority

OS   : Occupational Standards

OSH   : Occupation Safety and Health

OSHA   : Occupation Safety and Health Act

OSHS   : Occupational Safety and Health Standards

PPE   : Personal Protective Equipment

SSAC   : Sector Skills Advisory Committee

TVET   : Technical and Vocational Education and Training

TVET CDACC: TVET Curriculum Development Assessment and Certification Council

KEY TO UNIT CODE

AGR/OS/EXT/ BC/ 01/ 6 A

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

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OVERVIEW

The agricultural extension level six qualification consists of competencies that a person must achieve to Apply agricultural extension and rural sociology, produce conventional and non-conventional livestock, manage soil and water resources, formulate livestock feeds, process farm products, protect crop, produce horticultural crop and manage farm.

The units of competency comprising agricultural extension level 6 qualification include the following:

BASIC UNITS OF COMPETENCY	
UNIT CODE	UNIT OF COMPETENCY
AGR/OS/EXT/BC/01/6/A	Demonstrate communication skills
AGR/OS/EXT/BC/02/6/A	Demonstrate numeracy skills
AGR/OS/EXT/BC/03/6/A	Demonstrate digital literacy
AGR/OS/EXT/BC/04/6/A	Demonstrate entrepreneurial skills
AGR/OS/EXT/BC/05/6/A	Demonstrate employability skills
AGR/OS/EXT/BC/06/6/A	Demonstrate environmental literacy
AGR/OS/EXT/BC/07/6/A	Demonstrate occupational safety and health practices
COMMON UNIT OF COMPETENCY	
AGR/OS/EXT/CC/01/6/A	Demonstrate agricultural extension and rural sociology
CORE UNITS OF COMPETENCY	
AGR/OS/EXT/BC/01/6/A	Produce conventional and non-conventional livestock
AGR/OS/EXT/CR/02/6/A	Manage soil and water resources
AGR/OS/EXT/CR/03/6/A	Formulate livestock feeds
AGR/OS/EXT/CR/04/6/A	Process farm products
AGR/OS/EXT/CR/05/6/A	Protect crop
AGR/OS/EXT/CR/06/6/A	Produce horticultural crop
AGR/OS/EXT/CR/07/6/A	Manage farm

BASIC UNITS OF COMPETENCY

DEMONSTRATE COMMUNICATION SKILLS

UNIT CODE: AGR/OS/EXT/BC/01/6/A

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range*
1. Meet communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met based on workplace requirements 1.2 Different communication approaches are identified and applied according to clients' needs 1.3 Conflict is identified and addressed as per the standards of the organization
2. Develop communication strategies	2.1 Strategies for effective internal and external dissemination of information are developed as per organization's requirements 2.2 Special communication needs are considered in developing strategies according workplace procedures 2.3 *Communication strategies* are analyzed, evaluated and revised based the workplace needs
3. Establish and maintain communication pathways	3.1 Pathways of communication are established as per organization policy 3.2 Pathways are maintained and reviewed according to organization procedures
4. Promote use of communication strategies	4.1 Information is provided to all areas of the organization as per strategy requirements 4.2 Effective communication techniques are articulated and modeled according work requirements 4.3 Personnel are given guidance about adapting communication

	strategies as per organization procedures
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in *interview situations* based on the workplace requirements
	5.2 Records of interviews are made and maintained in accordance with organizational procedures
	5.3 Effective questioning, listening and nonverbal communication techniques are used as per needs
6. Facilitate group discussion	6.1 Mechanisms to enhance *effective group interaction* are identified and implemented according to workplace requirements
	6.2 Strategies to encourage group participation are identified and used as per organizations' procedures
	6.3 Meetings objectives and agenda are set and followed based on workplace requirements
	6.4 Relevant information is provided and feedback obtained according to set protocols
	6.5 Evaluation of group communication strategies is undertaken in accordance with workplace guidelines
	6.6 Specific communication needs of individuals are identified and addressed as per individual needs
7. Represent the organization	5.1 7Relevant presentation are researched and presented based on internal or external communication forums requirements
	5.2 Presentation is delivered in a clear and sequential manner as per the predetermined time
	5.3 Presentation is made as per appropriate media
	5.4 Difference views are respected based on workplace procedures
	5.5 Written communication is done as per organizational standards
	5.6 Inquiries are responded according to organizational standard

RANGE

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

Variable	Range
1. Communication strategies may include but not limited to:	• Language switch • Comprehension check • Repetition • Asking confirmation

	• Paraphrase	
	• Clarification request	
	• Translation	
	• Restructuring	
	• Approximation	
	• Generalization	
2. Effective group interaction may include but not limited to:	• Identifying and evaluating what is occurring within an interaction in a nonjudgmental way	
	• Using active listening	
	• Making decision about appropriate words, behavior	
	• Putting together response which is culturally appropriate	
	• Expressing an individual perspective	
	• Expressing own philosophy, ideology and background and exploring impact with relevance to communication	
3. Situations may include but not limited to:	• Establishing rapport	
	• Eliciting facts and information	
	• Facilitating resolution of issues	
	• Developing action plans	
	• Diffusing potentially difficult situations	

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

Required Skills
The individual needs to demonstrate the following skills:
- Communication
- Active listening
- Interpretation
- Negotiation
- Writing

Required Knowledge
The individual needs to demonstrate knowledge of:

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

EVIDENCE GUIDE

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

1.	Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Developed communication strategies to meet the organization requirements and applied in the workplace 1.2 Established and maintained communication pathways for effective communication in the workplace 1.3 Used communication strategies involving exchanges of complex oral information
2.	Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or tasks
3.	Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct observation 3.2 Oral questioning 3.3 Written texts
4.	Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE NUMERACY SKILLS

UNIT CODE: AGR/OS/EXT/BC/02/6/A

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Apply a wide range of mathematical calculations for work	1.1 Mathematical information embedded in a range of workplace tasks and texts is extracted as per workplace procedures. 1.2 Mathematical information is interpreted and comprehended as per job specifications 1.3 A range of mathematical and problem solving processes are selected and used as per job specification 1.4 Different forms of fractions, decimals and percentages are flexibly used as per SOPs 1.5 Calculation performed with positive and negative numbers as per SOPs 1.6 Numbers are expressed as powers and roots and are used in calculations as per SOPs 1.7 Calculations done using routine formulas as per SOPs 1.8 Estimation and assessment processes are used to check outcome as per workplace procedures 1.9 Mathematical language is used to discuss and explain the processes, results and implications of the task as per workplace procedures
2. Use and apply ratios, rates and	2.1 Information regarding ratios, rates and proportions extracted from a range of workplace tasks and texts as per SOPs

proportions for work	2.2	Mathematical information related to ratios, rate and proportions is analysed as per SOPs
	2.3	Problem solving processes are used to undertake the task as per workplace procedures
	2.4	Equivalent ratios and rates are simplified as per SOPs
	2.5	Quantities are calculated using ratios, rates and proportions as per SOPS
	2.6	Graphs, charts or tables are constructed to represent ratios, rates and proportions as per SOPs
	2.7	The outcomes reviewed and checked as per job specifications
	2.8	Information is record using mathematical language and symbols as per workplace procedures
3. Estimate, measure and calculate measurement for work	3.1	Measurement information embedded in workplace texts and tasks are extracted and interpreted as per job specifications
	3.2	Appropriate workplace measuring equipment are identified and selected as per job specifications
	3.3	Accurate measurements are estimated and made as per SOPs
	3.4	The area of *2D shapes* including compound shapes are calculated as per SOPs
	3.5	The volume of 3D shapes is calculated using relevant formulas as per SOPs
	3.6	Sides of right angled triangles are calculated using Pythagoras' theorem as per SOPs
	3.7	Conversions are performed between units of measurement as per job specification
	3.8	Problem solving processes are used to undertake the task as per workplace Procedures
	3.9	The measurement outcomes are reviewed and checked as per workplace procedures
	3.10	Information is recorded using mathematical language and symbols appropriate for the task as per workplace procedures
4. Use detailed maps to plan travel routes for work	4.1	Different types of maps are identified and interpreted as per job requirements
	4.2	Key features of maps are identified as per job requirements
	4.3	Scales are identified and interpreted as per job requirements
	4.4	Scales are applied to calculate actual distances
	4.5	Positions or locations are determined using directional information as per job requirements

		4.6 Routes are planned by determining directions and calculating distances, speeds and times as per job requirements
		4.7 Information is gathered and identified and relevant factors related to planning a route checked as per job requirements
		4.8 Relevant equipment is select and checked for accuracy and operational effectiveness as per job requirements
		4.9 Task is planned and recorded using specialized mathematical language and symbols appropriate for the task as per job requirements
5.	Use geometry to draw 2D shapes and construct 3D shapes for work	5.1 A range of 2D shapes and 3D shapes and their uses in work contexts is identified as per job specifications
		5.2 Features of 2D and 3D shapes are named and described as per job specifications
		5.3 Types of angles in 2D and 3D shapes are identified as per job specifications
		5.4 Angles are drawn, estimated and measured using geometric instruments as per job requirements
		5.5 Angle properties of 2D shapes are named and identified as per SOPs
		5.6 Angle properties are used to evaluate unknown angles in shapes as per SOPs
		5.7 Properties of perpendicular and parallel lines are applied to shapes as per SOPs
		5.8 Understanding and use of symmetry is demonstrated as per SOPs
		5.9 Understanding and use of similarity is demonstrated as per SOPs
		5.10 The workplace tasks and mathematical processes required are identified as per workplace procedures
		5.11 2D shapes is drawn for work as per job specification
		5.12 3D shapes is constructed for work as per job specification
		5.13 The outcomes are reviewed and checked as per workplace procedures
		5.14 Specialized mathematical language and symbols appropriate for the task are used as per SOPs
6.	Collect, organize, and interpret	6.1 Workplace issue requiring investigation are identified as per workplace procedures
		6.2 Audience / population / sample unit is determined as per

statistical data for work	workplace procedures as per workplace procedures	
	6.3 Data to be collected is identified as per workplace procedures	
	6.4 Data collection method is selected as per workplace procedures	
	6.5 Appropriate statistical data is collected and organized as per SOPs	
	6.6 Data is illustrated in appropriate formats as per SOPs	
	6.7 The effectiveness of different types of graphs are compared as per SOPs	
	6.8 The summary statistics for collected data is calculated as per SOPs	
	6.9 The results / findings are interpreted as per SOPs	
	6.10 Data is checked to ensure that it meets the expected results and content as per workplace procedures	
	6.11 Information from the results including tables, graphs and summary statistics is extracted and interpreted as per workplace procedure	
	6.12 Mathematical language and symbols are used to report results of investigation as per workplace procedure	
7. Use routine formula and algebraic expressions for work	7.1 Understanding of informal and symbolic notation, representation and conventions of algebraic expressions is demonstrated as per SOPs	
	7.2 Simple algebraic expressions and equations are developed as per job specification	
	7.3 Operate on algebraic expressions as per job requirement	
	7.4 Algebraic expressions are simplified as per job requirement	
	7.5 Substitution into simple routine equations is done as per SOPs	
	7.6 Routine formulas used for work tasks are identified and comprehended as per SOPs	
	7.7 Routine formulas are evaluated by substitution as per SOPs	
	7.8 Routine formulas transposed as per SOPs	
	7.9 Appropriate formulas are identified and used for work related tasks as per workplace procedures	
	7.10 Outcomes are checked and result of calculation used as per workplace procedures	
8. Use common functions of a	8.1 Required numerical information to perform tasks is located as per job specification	

scientific calculator for work	8.2 The order of operations and function keys necessary to solve mathematical calculation are determined as per job specification
	8.3 Function keys on a scientific calculator are identified and used as per SOPs
	8.4 Estimations are referred to check reasonableness of problem solving process as per workplace procedures
	8.5 Appropriate mathematical language, symbols and conventions are used to report results as per workplace procedures

RANGE

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

Variable	Range
1. 2D shapes may include but not limited may include but not limited to:	• Triangles • Square • Rectangle • Triangle

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

Required Skills
The individual needs to demonstrate the following skills:
- Measuring
- Logical thinking
- Computing
- Drawing of graphs
- Applying mathematical formulas
- Analytical

Required knowledge

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

EVIDENCE GUIDE

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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1. 1Developed communication strategies to meet the organization requirements and applied in the workplace 1. 2Established and maintained communication pathways for effective communication in the workplace 1. 3 Used communication strategies involving exchanges of complex oral information
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written test 3.4 Portfolio of Evidence 3.5 Interview 3.6 Third party report
4. Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 Off-the –job

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

DEMONSTRATE DIGITAL LITERACY

UNIT CODE: AGR/OS/EXT/BC/03/6/A

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range*
1. Identify appropriate computer software and hardware	1.1 Concepts of ICT are determined in accordance with computer equipment 1.2 Classifications of computers are determined in accordance with manufacturers specification 1.3 Appropriate computer software is identified according to manufacturer's specification 1.4 Appropriate computer hardware is identified according to manufacturer's specification 1.5 Functions and commands of operating system are determined in accordance with manufacturer's specification
2. Apply security measures to data, hardware, software in automated environment	2.1 *Data security and privacy are classified* in accordance with the prevailing technology 2.2 *Security threats* reidentified *and control measures* are applied in accordance with laws governing protection of ICT 2.3 Computer threats and crimes are detected in accordance to Information Management security guidelines 2.4 Protection against computer crimes is undertaken in accordance with laws governing protection of ICT
3. Apply computer software in solving	3.1 *Word processing concepts* are applied in resolving workplace tasks, report writing and documentation as per the job

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	tasks		requirements
		3.2	*Word processing utilities* are applied in accordance with workplace procedures
		3.3	Worksheet layout is prepared in accordance with work procedures
		3.4	Worksheet is built and data manipulated in the worksheet in accordance with workplace procedures
		3.5	Continuous data manipulated on worksheet is undertaken in accordance with work requirements
		3.6	Database design and manipulation is undertaken in accordance with office procedures
		3.7	Data sorting, indexing, storage, retrieval and security is provided in accordance with workplace procedures
4.	Apply internet and email in communication at workplace	4.1	Electronic mail addresses are opened and applied in workplace communication in accordance with office policy
		4.2	Office internet functions are defined and executed in accordance with office procedures
		4.3	*Network configuration* is determined in accordance with office operations procedures
		4.4	Official World Wide Web is installed and managed according to workplace procedures
5.	Apply Desktop publishing in official assignments	5.1	Desktop publishing functions and tools are identified in accordance with manufactures specifications
		5.2	Desktop publishing tools are developed in accordance with work requirements
		5.3	Desktop publishing tools are applied in accordance with workplace requirements
		5.4	Typeset work is enhanced in accordance with workplace standards
6.	Prepare presentation packages	6.1	Types of presentation packages are identified in accordance with office requirements
		6.2	Slides are created and formulated in accordance with workplace procedures
		6.3	Slides are edited and run-in accordance with work procedures
		6.4	Slides and handouts are printed according to work requirements

RANGE

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

Variable	Range
1. Appropriate computer hardware may include but not limited to:	Collection of physical parts of a computer system such as: • Computer case, monitor, keyboard, and mouse • All the parts inside the computer case, such as the hard disk drive, motherboard and video card
2. Data security and privacy may include but not limited to:	• Confidentiality of data • Cloud computing • Integrity -but-curious data surfing
3. Security and control measures may include but not limited to:	• Counter measures against cyber terrorism • Risk reduction • Cyber threat issues • Risk management • Pass-wording
4. Security threats may include but not limited to:	• Cyber terrorism • Hacking

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

Required Skills
The individual needs to demonstrate the following skills:
- Analytical skills
- Interpretation
- Typing
- Communication
- Computing (applying fundamental operations such as addition, subtraction, division and multiplication)
- Using calculator
- Basic ICT skills

Required Knowledge
The individual needs to demonstrate knowledge of:
- Software concept

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

EVIDENCE GUIDE

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

1.	Critical Aspects of Competency	Assessment requires evidence that the candidate:
		1.1 Identified and controlled security threats
		1.2 Detected and protected computer crimes
		1.3 Applied word processing in office tasks
		1.4 Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures
		1.5 Opened electronic mail for office communication as per workplace procedure
		1.6 Installed internet and World Wide Web for office tasks in accordance with office procedures
		1.7 Integrated emerging issues in computer ICT applications
		1.8 Applied laws governing protection of ICT
2.	Resource Implications	The following resources should be provided:
		2.1 Access to relevant workplace where assessment can take place
		2.2 Appropriately simulated environment where assessment can take place
3.	Methods of Assessment	Competency may be assessed through:
		3.1 Observation
		3.2 Oral questioning
		3.3 Written test
		3.4 Portfolio of Evidence
		3.5 Interview
		3.6 Third party report
4.	Context of Assessment	Competency may be assessed:
		4.1 On-the-job
		4.2 Off-the –job
		4.3 During Industrial attachment
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE ENTREPRENEURIAL SKILLS

UNIT CODE : AGR/OS/EXT/BC/04/6/A

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
1. Demonstrate understanding of an Entrepreneur	1. 1 Entrepreneurs and Business persons are distinguished as per principles of entrepreneurship 1. 2 *Types of entrepreneurs* are identified as per principles of entrepreneurship 1. 3 Ways of becoming an Entrepreneur are identified as per principles of Entrepreneurship 1. 4 *Characteristics of Entrepreneurs* are identified as per principles of Entrepreneurship 1. 5 Factors affecting Entrepreneurship development are explored as per principles of Entrepreneurship
2. Demonstrate understanding of Entrepreneurship and self-employment	2. 1 Entrepreneurship and self-employment are distinguished as per principles of entrepreneurship 2. 2 Importance of self-employment is analysed based on business procedures and strategies 2. 3 *Requirements for entry into self-employment* are identified according to business procedures and strategies 2. 4 Role of an Entrepreneur in business is determined according to business procedures and strategies 2. 5 Contributions of Entrepreneurs to National development are identified as per business procedures and strategies 2. 6 Entrepreneurship culture in Kenya is explored as per business procedures and strategies 2. 7 Born or made Entrepreneurs are distinguished as

		per entrepreneurial traits
3. Identify Entrepreneurship opportunities	3.1	Sources of business ideas are identified as per business procedures and strategies
	3.2	Business ideas and opportunities are generated as per business procedures and strategies
	3.3	Business life cycle is analysed as per business procedures and strategies
	3.4	Legal aspects of business are identified as per procedures and strategies
	3.5	Product demand is assessed as per market strategies
	3.6	Types of *business environment* are identified and evaluated as per business procedures
	3.7	Factors to consider when evaluating business environment are explored based on business procedure and strategies
	3.8	Technology in business is incorporated as per best practice
4. Create entrepreneurial awareness	4.1	*Forms of businesses* are explored as per business procedures and strategies
	4.2	Sources of business finance are identified as per business procedures and strategies
	4.3	Factors in selecting source of business finance are identified as per business procedures and strategies
	4.4	*Governing policies* on Small Scale Enterprises (SSEs) are determined as per business procedures and strategies
	4.5	Problems of starting and operating SSEs are explored as per business procedures and strategies
5. Apply entrepreneurial motivation	5.1	*Internal and external motivation* factors are determined in accordance with motivational theories
	5.2	Self-assessment is carried out as per entrepreneurial orientation
	5.3	Effective communications are carried out in accordance with communication principles
	5.4	Entrepreneurial motivation is applied as per motivational theories

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6.	Develop innovative business strategies	6.1	Business innovation strategies are determined in accordance with the organization strategies
		6.2	Creativity in business development is demonstrated in accordance with business strategies
		6.3	*Innovative business strategies* are developed as per business principles
		6.4	Linkages with other entrepreneurs are created as per best practice
		6.5	ICT is incorporated in business growth and development as per best practice
7.	Develop Business Plan	7.1	Identified Business is described as per business procedures and strategies
		7.2	Marketing plan is developed as per business plan format
		7.3	Organizational/Management plan is prepared in accordance with business plan format
		7.4	Production/operation plan in accordance with business plan format
		7.5	Financial plan is prepared in accordance with the business plan format
		7.6	Executive summary is prepared in accordance with business plan format
		7.7	Business plan is presented as per best practice

RANGE

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

Variable	Range
1. Types of entrepreneurs may include but not limited to:	• Innovators • Imitators • Craft • Opportunistic • Speculators
2. Characteristics of Entrepreneurs may include but not limited to:	• Creative • Innovative • Planner

	• Risk taker • Networker • Confident • Flexible • Persistent • Patient • Independent • Future oriented • Goal oriented
3. Requirements for entry into self-employment may include but not limited to	• Technical skills • Management skills • Entrepreneurial skills • Resources • Infrastructure
4. Internal and external motivation may include but not limited to:	• Interest • Passion • Freedom • Prestige • Rewards • Punishment • Enabling environment • Government policies
5. Business environment may include but not limited to:	• External • Internal • Intermediate
6. Forms of businesses may include but not limited to:	• Sole proprietorship • Partnership • Limited companies • Cooperatives
7. Governing policies may include but not limited to:	• Increasing scope for finance • Promoting cooperation between entrepreneurs and private sector • Reducing regulatory burden on entrepreneurs • Developing IT tools for entrepreneurs

8. Innovative business strategies may include but not limited to:	• New products • New methods of production • New markets • New sources of supplies • Change in industrialization

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

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

Required Knowledge

The individual needs to demonstrate knowledge of:
- Decision making
- Business communication
- Change management
- Competition
- Risk
- Net working
- Time management
- Leadership
- Factors affecting entrepreneurship development
- Principles of Entrepreneurship
- Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
- Conflict resolution
- Health, safety and environment (HSE) principles and requirements
- Customer care strategies
- Basic financial management
- Business strategic planning

- Impact of change on individuals, groups and industries
- Government and regulatory processes
- Local and international market trends
- Product promotion strategies
- Market and feasibility studies
- Government and regulatory processes
- Local and international business environment
- Relevant developments in other industries
- Regional/ County business expansion strategies

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	1. 1 Assessment requires evidence that the candidate:
	1. 2 Distinguished entrepreneurs and businesspersons correctly
	1. 3 Identified ways of becoming an entrepreneur appropriately
	1. 4 Explored factors affecting entrepreneurship development appropriately
	1. 5 Analysed importance of self-employment accurately
	1. 6 Identified requirements for entry into self-employment correctly
	1. 7 Identified sources of business ideas correctly
	1. 8 Generated Business ideas and opportunities correctly
	1. 9 Analysed business life cycle accurately
	1. 10 Identified legal aspects of business correctly
	1. 11 Assessed product demand accurately
	1. 12 Determined Internal and external motivation factors appropriately
	1. 13 Carried out communications effectively
	1. 14 Identified sources of business finance correctly
	1. 15 Determined Governing policy on small scale enterprise appropriately
	1. 16 Explored problems of starting and operating SSEs effectively
	1. 17 Developed Marketing, Organizational/Management, Production/Operation and Financial plans correctly

		1. 18 Prepared executive summary correctly
		1. 19 Determined business innovative strategies appropriately
		1. 20 Presented business plan effectively
2. Resource Implications		The following resources should be provided:
		2.1 Access to relevant workplace where assessment can take place
		2.2 Appropriately simulated environment where assessment can take place
3. Methods of Assessment		3.1 Written tests
		3.2 Oral questions
		3.3 Third party report
		3.4 Interviews
		3.5 Portfolio of Evidence
4. Context of Assessment		Competency may be assessed
		4.1 On-the-job
		4.2 Off-the –job
		4.3 During Industrial attachment
5. Guidance information for assessment		Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE EMPLOYABILITY SKILLS

UNIT CODE: AGR/OS/EXT/BC/05/6/A

UNIT DESCRIPTON

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating interpersonal communication, critical safe work habits, leading a workplace team, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and managing ethical performance.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range*
1. Conduct self-management	1.1 Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 1.2 Emotional intelligence is demonstrated as per workplace requirements. 1.3 Individual performance is evaluated and monitored according to the agreed targets. 1.4 Assertiveness is developed and maintained based on the requirements of the job. 1.5 Accountability and responsibility for own actions are demonstrated based on workplace instructions. 1.6 Self-esteem and a positive self-image are developed and maintained based on values. 1.7 Time management, attendance and punctuality are observed as per the organization policy. 1.8 Goals are managed as per the organization's objective 1.9 Self-strengths and weaknesses are identified based on personal objectives
2. Demonstrate	2.1 Writing skills are demonstrated as per communication policy

interpersonal communication	2.2 Negotiation and persuasion skills are demonstrated as per communication policy
	2.3 Internal and external stakeholders' needs are identified and interpreted as per the communication policy
	2.4 Communication networks are established based on workplace policy
	2.5 Information is shared as per communication policy
3. Demonstrate critical safe work habits	3.1 Stress is managed in accordance with workplace policy.
	3.2 Punctuality and time consciousness is demonstrated in line with workplace policy.
	3.3 Personal objectives are integrated with organization goals based on organization's strategic plan.
	3.4 *Resources* are utilized in accordance with workplace policy.
	3.5 Work priorities are set in accordance to workplace goals and objectives.
	3.6 Leisure time is recognized and utilized in line with personal objectives.
	3.7 *Drugs and substances of abuse* are identified and avoided based on workplace policy.
	3.8 HIV and AIDS prevention awareness is demonstrated in line with workplace policy.
	3.9 Safety consciousness is demonstrated in the workplace based on organization safety policy.
	3.10 *Emerging issues* are identified and dealt with in accordance with organization policy.
4. Lead a workplace team	4.1 Performance targets for the *team* are set based on organization's objectives
	4.2 Duties are assigned in accordance with the organization policy.
	4.3 *Forms of communication* in a team are established according to organization's policy.
	4.4 Team performance is evaluated based on set targets as per workplace policy.
	4.5 Conflicts are resolved between team members in line with organization policy.
	4.6 Gender related issues are identified and mainstreamed in accordance workplace policy.
	4.7 Human rights and fundamental freedoms are identified and respected as Constitution of Kenya 2010.

		4.8 Healthy relationships are developed and maintained in line with workplace.
5.	Plan and organize work	5.1 Work plans are prepared based on activities and budget. 5.2 Assigned tasks are interpreted and expectations identified as per the workplace instructions. 5.3 Task occupational safety and health requirements are identified and observed regulations. 5.4 Work resources are identified, mobilized, allocated and utilized based on organization work plans. 5.5 Work activities are monitored and evaluated in line with work plans and workplace policy. 5.6 Work plans are reviewed based on target and available resources.
6.	Maintain professional growth and development	6.1 Personal training needs are identified and assessed in line with the requirements of the job. 6.2 *Training and career opportunities* are identified and utilized based on job requirements. 6.3 Resources for training are mobilized and allocated based organizations and individual skills needs. 6.4 Licensees and certifications relevant to job and career are obtained and renewed as per policy. 6.5 Work priorities and personal commitments are balanced and managed based on requirements of the job and personal objectives. 6.6 Recognitions are sought as proof of career advancement in line with professional requirements.
7.	Demonstrate workplace learning	7.1 Learning opportunities are sought and managed based on job requirement and organization policy. 7.2 Improvement in performance is demonstrated based on courses attended. 7.3 Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job 7.4 Time and effort is invested in learning new skills based on job requirements 7.5 Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy. 7.6 New systems are developed and maintained in accordance with the requirements of the job. 7.7 Awareness of personal role in workplace *innovation* is

	demonstrated based on requirements of the job.
8. Demonstrate problem solving skills	8.1 Creative, innovative and practical solutions are developed based on the problem 8.2 Independence and initiative in identifying and solving problems is demonstrated based on requirements of the job. 8.3 Team problems are solved as per the workplace guidelines 8.4 Problem solving strategies are applied as per the workplace guidelines 8.5 Problems are analyzed and assumptions tested as per the context of data and circumstances
9. Manage ethical performance	9.1 Policies and guidelines are observed as per the workplace requirements 9.2 Self-worth and professionalism is exercised in line with personal goals and organizational policies 9.3 Code of conduct is observed as per the workplace requirements 9.4 Integrity is demonstrated as per legal requirement

RANGE

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

Variable	Range
1. Drug and substance abuse may include but not limited to:	Commonly abused • Alcohol • Tobacco • Miraa • Over-the-counter drugs • Cocaine • Bhang • Glue
2. Feedback may include but not limited to:	• Verbal • Written • Informal • Formal

3. Relationships may include but not limited to:	• Man/Woman • Trainer/trainee • Employee/employer • Client/service provider • Husband/wife • Boy/girl • Parent/child • Sibling relationships
4. Forms of communication may include but not limited to:	• Written • Visual • Verbal • Non verbal • Formal and informal
5. Team may include but not limited to:	• Small work group • Staff in a section/department • Inter-agency group
6. Personal growth may include but not limited to:	• Growth in the job • Career mobility • Gains and exposure the job gives • Net workings • Benefits that accrue to the individual as a result of noteworthy performance
7. Personal objectives may include but not limited to:	• Long term • Short term • Broad • Specific
8. Trainings and career opportunities may includes but not limited to	• Participation in training programs • Serving as Resource Persons in conferences and workshops
9. Resource may include may but not limited to:	• Human • Financial • Technology
10. Innovation may include but not limited to:	• New ideas • Original ideas • Different ideas • Methods/procedures

	• Processes • New tools
11. Emerging issues may include but not limited to:	• Terrorism • Social media • National cohesion • Open offices
12. Range of media for learning may include but not limited to:	• Mentoring • peer support and networking • IT and courses

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

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

Required Knowledge

The individual needs to demonstrate knowledge of:

- Work values and ethics
- Company policies
- Company operations, procedures and standards
- Occupational Health and safety procedures
- Fundamental rights at work
- Workplace communication
- Concept of time

- Time management
- Decision making
- Types of resources
- Work planning
- Organizing work
- Monitoring and evaluation
- Record keeping
- Gender mainstreaming
- HIV and AIDS
- Drug and substance abuse
- Professional growth and development
- Technology in the workplace
- Innovation
- Emerging issues

EVIDENCE GUIDE

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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Conducted self-management 1.2 Demonstrated interpersonal communication 1.3 Demonstrated critical safe work habits 1.4 Demonstrated the ability to lead a workplace team 1.5 Planned and organized work 1.6 Maintained professional growth and development 1.7 Demonstrated workplace learning 1.8 Demonstrated problem solving skills 1.9 Demonstrated the ability to manage performance ethically
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written test

	3.4 Portfolio of Evidence 3.5 Interview 3.6 Third party report	
4. Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment	
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.	

DEMONSTRATE ENVIRONMENTAL LITERACY

UNIT CODE: AGR/OS/EXT/BC/06/6/A

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range*
1. Control environmental hazard	1.1 Storage methods for environmentally hazardous materials are strictly followed according to environmental regulations and OSHS. 1.2 Disposal methods of hazardous wastes are followed according to environmental regulations and OSHS. 1.3 *PPE* is used according to OSHS.
2. Control environmental Pollution	2.1 Environmental pollution *control measures* are implemented in accordance with international protocols. 2.2 Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999 2.3 Methods for minimizing noise pollution is complied with based on Noise and Excessive Vibration *Pollution and* Control *Regulations*, 2009
3. Demonstrate sustainable resource use	3.1 Methods for minimizing wastage are complied with based on organizational waste management guide 3.2 Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle)

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		3.3	Methods for economizing and reducing resource consumption are practiced as per the Constitution of Kenya 2010 Article 69.
4.	Evaluate current practices in relation to resource usage	4.1	Information on resource efficiency systems and procedures are collected and provided as per work groups/sector
		4.2	Current resource usage is measured and recorded as per work group
		4.3	Current purchasing strategies are analyzed and recorded according to industry procedures.
		4.4	Current work processes to access information and data is analyzed following enterprise protocol.
5.	Identify environmental legislations/conventions for environmental concerns	5.1	Environmental legislations/conventions and local ordinances are identified according to the different environmental aspects/impact
		5.2	Industrial standard/environmental practices are described according to the different environmental concerns
6.	Implement specific environmental programs	6.1	Programs/Activities are identified according to organizations policies and guidelines.
		6.2	Individual roles/responsibilities are determined and performed based on the activities identified.
		6.3	Problems/constraints encountered are resolved in accordance with organizations' policies and guidelines
		6.4	Stakeholders are consulted based on company guidelines
7.	Monitor activities on Environmental protection/Programs	7.1	Activities are periodically monitored and Evaluated according to the objectives of the environmental program
		7.2	Feedback from stakeholders is gathered and considered in Proposing enhancements to the program based on consultations
		7.3	Data gathered are analyzed based on Evaluation requirements
		7.4	Recommendations are submitted based on the findings
		7.5	Management support systems are set/established to sustain and enhance the program
		7.6	Environmental incidents are monitored and reported to
		7.7	concerned/proper authorities
8.	Analyze resource use	8.1	All resource consuming processes are Identified as per the organizational work plan
		8.2	Quantity and nature of resource consumed is determined

	based on processes
	8.3 Resource flow is analyzed as per different parts of the process.
	8.4 Wastes are classified according to NEMA regulations on waste management.
9. Develop resource Conservation plans	9.1. Efficiency of use/conversion of resources is determined according to industry protocol.
	9.2. Causes of low efficiency of use of resources are Determined based on industry protocol.
	9.3. Plans for increasing the efficiency of resource use are developed based on findings.

RANGE

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

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

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills
The individual needs to demonstrate the following skills:

- Measuring
- Recording
- Analytical
- Monitoring
- Communication
- Writing

Required Knowledge

The individual needs to demonstrate knowledge of:

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

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Controlled environmental hazard 1.2 Controlled environmental pollution 1.3 Demonstrated sustainable resource use 1.4 Evaluated current practices in relation to resource usage 1.5 Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues /concerns. 1.6 Described industrial standard environmental practices according to the different environmental issues/concerns. 1.7 Resolved problems/ constraints encountered based on management standard procedures

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		1.8 Implemented and monitored environmental practices on a periodic basis as per company guidelines 1.9 Recommended solutions for the improvement of the program 1.10 Monitored and reported to proper authorities any environmental incidents
	2. Resource Implications	The following resources should be provided: 2.1 Workplace with storage facilities 2.2 Tools, materials and equipment relevant to the tasks (e.g. Cleaning tools, cleaning materials, trash bags) 2.3 PPE, manuals and references 2.4 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.5 Case studies/scenarios relating to environmental Protection
3	Methods of Assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written test 3.4 Portfolio of Evidence 3.5 Interview 3.6 Third party report
4	Context of Assessment	Competency may be assessed 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment
5	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

UNIT CODE: AGR/OS/EXT/BC/07/6/A

UNIT DESCRIPTION

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

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range*
1. Identify workplace hazards and risk	1.1 *Hazards* in the workplace are identified *based their indicators* 1.2 Risks and hazards are evaluated based on legal requirements. 1.3 *OSH concerns* raised by workers are addressed as per legal requirements.
2. Control OSH hazards	2.1 Hazard prevention *and control measures* are implemented as per legal requirement. 2.2 Risk assessment is conducted and a risk matrix developed based on likely impact. 2.3 *Contingency measures*, including *emergency procedures* during workplace *incidents and emergencies* are recognized and established in accordance with organization procedures.
3. Implement OSH programs	3.1 Company OSH program are identified, evaluated and reviewed based on legal requirements. 3.2 Company OSH programs are implemented as per legal requirements. 3.3 Workers are capacity built on OSH standards and procedures as per legal requirements 3.4 *OSH-related records* are maintained as per legal requirements.

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RANGE

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

Variable	Range
1. Hazards may include but not limited to:	- Physical hazards – impact, illumination, pressure, noise, - vibration, extreme temperature, radiation - Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects - Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors - Ergonomics - Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, - varying metabolic cycles - Physiological factors – monotony, personal relationship, work out cycle - Safety hazards (unsafe workplace condition) –confined space, excavations, falling objects, gas leaks, electrical, poor storage of materials and waste, spillage, waste and debris - Unsafe workers' act (Smoking in off-limited areas, Substance and alcohol abuse at work)
2. Indicators may include but not limited to:	- Increased of incidents of accidents, injuries - Increased occurrence of sickness or health complaints/ symptoms - Common complaints of workers related to OSH - High absenteeism for work-related reasons
3. OSH concerns may include but not limited to:	- Workers' experience/observance on presence of work hazards - Unsafe/unhealthy administrative arrangements (prolonged work hours, no break time, constant overtime, scheduling of tasks) - Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines

4. Safety gears /PPE (Personal Protective Equipment) may include but not limited to:	• Arm/Hand guard, gloves • Eye protection (goggles, shield) • Hearing protection (ear muffs, ear plugs) • Hair Net/cap/bonnet • Hard hat • Face protection (mask, shield) • Apron/Gown/coverall/jump suit • Anti-static suits • High-visibility reflective vest
5. Appropriate risk controls may include but not limited to:	• Appropriate risk controls in order of impact are as follows: • Eliminate the hazard altogether (i.e., get rid of the dangerous machine) • Isolate the hazard from anyone who could be harmed (i.e., keep the machine in a closed room and operate it remotely; barricade an unsafe area off) • Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) • Use administrative controls to reduce the risk (i.e., train workers how to use equipment safely; train workers about the risks of harassment; issue signage) • Use engineering controls to reduce the risk (i.e., attach guards to the machine to protect users) • Use personal protective equipment (i.e., wear • gloves and goggles when using the machine)
6. Contingency measures may include but not limited to:	• Evacuation • Isolation • Decontamination • (Calling designed) emergency personnel
7. Incidents and emergencies may include but not limited to:	• Chemical spills • Equipment/vehicle accidents • Explosion • Fire • Gas leak • Injury to personnel • Structural collapse • Toxic and/or flammable vapors emission.

8. OSH-related Records may include but not limited to:	• Medical/Health records
	• Incident/accident reports
	• Sickness notifications/sick leave application
	• OSH-related trainings obtained

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Communication
- Interpersonal
- Presentation
- Risk assessment
- Evaluation
- Critical thinking
- Problem solving
- Negotiation

Required Knowledge

The individual needs to demonstrate knowledge of:

- General OSH Principles
- Occupational hazards/risks recognition
- OSH organizations providing services on OSH evaluation and/or work environment measurements (WEM)
- National OSH regulations; company OSH policies and protocols
- Systematic gathering of OSH issues and concerns
- General OSH principles
- National OSH regulations
- Company OSH and recording protocols, procedures and policies/guidelines
- Training and/or counseling methodologies and strategies

EVIDENCE GUIDE

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

1. Critical Aspects	Assessment requires evidence that the candidate:

of Competency	1.1 Identified hazards in the workplace based their indicators
	1.2 Evaluated workplace hazards based on legal requirements.
	1.3 Addressed OSH concerns raised by workers as per legal requirements.
	1.4 Implemented hazard prevention and control measures as per legal requirement.
	1.5 Conducted risk assessment as per legal requirement.
	1.6 Developed risk matrix based on likely impact.
	1.7 Recognized and established contingency measures in accordance with organization procedures.
	1.8 Identified, evaluated and reviewed company OSH program based on legal requirements.
	1.9 Implemented company OSH programs as per legal requirements.
	1.10 Capacity built workers on OSH standards and procedures as per legal requirements
	1.11 Maintained OSH-related records as per legal requirements.
2. Resource Implications	The following resources should be provided:
	2.3 Access to relevant workplace where assessment can take place
	2.4 Appropriately simulated environment where assessment can take place
3. Methods of Assessment	Competency in this unit may be assessed through:
	3.1 Observation
	3.2 Oral questioning
	3.3 Written test
	3.4 Portfolio of Evidence
	3.5 Interview
	3.6 Third party report
4. Context of Assessment	Competency may be assessed:
	4.1 On-the-job
	4.2 Off-the –job
	4.3 During Industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

COMMON UNITS OF COMPETENCY

APPLY AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY

UNIT CODE: AGR/OS/EXT/CC/01/6/A

UNIT DESCRIPTION

This unit specifies competencies required to understand agricultural extension and rural sociology.it involves understanding of paradigm shift, understanding of government procedures, understanding of rural social sociology and understanding of farmers training and visits.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Demonstrate understanding of paradigm extension	1.1 ***Agricultural technologies*** are transferred to farmers as per technological invention. 1.2 Farmers are advised on technology as per the farmers requirement 1.3 Farmers are trained as per human resource development plan 1.4 Farmers activities are funded as per government policy
2. Demonstrate understanding of government procedures	2.1 Policies on agricultural matters are formulated as per government objective 2.2 Information is disseminated to farmers as per the government guidelines 2.3 Products for farmers use are procured as per procurement procedures 2.4 ***Financial reports*** on farmers activities are prepared accounting guidelines 2.5 ***Periodic report*** on agricultural occurrences are prepared as per the reports format
3. Demonstrate understanding of rural sociology	3.1. Farmers culture, beliefs and norms are determined as per the community 3.2. Local leaders are involved in farmers activities as per farmers needs 3.3. Farmers conflicts are resolved as per the conflict resolution methods 3.4. ***Farmers groups*** are formed as per the farmers needs
4. Demonstrate understanding of farmers training and visits	4. 1 Farmers to be trained are identified as per the farmers needs training resources are sourced as per training requirement 4. 2 Methods of training are identified as per the farmers needs 4. 3 Farmers are trained as the training manual 4. 4 Follow up on farmers activities are carried out as per training objectives

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RANGE OF VARIABLES

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

RANGE	VARIABLE May include but not limited to:
1. Agricultural technologies	1.1 Mechanization 1.2 Irrigation 1.3 Value addition
2. Financial report	2.1 Profit and loss account 2.2 Balance sheets
3. Periodic reports	3.1 Weekly 3.2 Monthly 3.3 Annual
4. Farmers group	4. 1 Clubs 4. 2 Societies and associations 4. 3 cooperatives

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Group mobilization
- Resource mobilization
- Communication
- Negotiation
- Mediation
- Leadership

Required knowledge

The individual needs to demonstrate knowledge of:

- preparation of extension materials
- technical knowledge
- culture, beliefs and norms
- Politics of the area

EVIDENCE GUIDE

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

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1. Critical aspects of competency	Assessment requires evidence that the candidate: Demonstrated:
	1.1 Understanding of paradigm extension
	1.2 Understanding of government procedures
	1.3 Understanding of rural sociology
	1.4 Understanding of farmers training and visits
2. Resource implication	The following resources should be provided:
	2.1 Materials, tools and equipment
	2.2 Assessment location
3. Method of assessment	Competency in this unit may be assessed through:
	3.1 Written tests
	3.2 Oral questioning
4. Context of assessment	4.1 Competency elements must be assessed in a safe working environment
	4.2 Assessment may be conducted in a workplace or simulated environment
	4.3 During industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

CORE UNITS OF COMPETENCY

PRODUCE CONVECTIONAL AND NON-CONVECTIONAL LIVESTOCK

UNIT CODE: AGR/OS/EXT/CR/01/6/A

UNIT DESCRIPTION

This unit specifies competencies required to produce convectional and non-convectional livestock. It involves selecting breeding stock, designing animal structures, constructing animal structures, installing and maintaining livestock tools, equipment and machines, breeding convectional and non-convectional live stocks, practicing livestock husbandry and managing young and growing stocks.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Select breeding stock	1.1 Breeding stocks are chosen according to breeding standards. 1.2 ***Breeding methods*** are identified according to intended breeder outcome. 1.3 Tools and equipment are chosen and prepared according to the requirement of the breeding operation. 1.4 Breed selection is done according to standard selection methods. 1.5 Breeding is done according to the set criteria in the livestock production manual.
2. Design and construct farm structures	2.1 Animal structures are designed according to animal housing plan. 2.2 Structure and maintenance materials are identified and gathered according to animal housing plan. 2.3 Animal structures are constructed according to animal housings plan in accordance to livestock production manual.
3. Install and maintain livestock tools, equipment and machines	3.1 Tools, equipment and machines are assembled as per manufactures manual 3.2 Tools, equipment and machines are fitted as per the housing plan and requirement 3.3 Tools, equipment and machines are cleaned as per manufactures manual. 3.4 Tools, equipment and machines are sharpened as per manufactures manual. 3.5 Tools, equipment and machines are greased or oiled as per manufactures manual. 3.6 Tools, equipment and machines are replaced as per the work policy.

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4. Breed farm animals	4.1 Livestock routine management practices are identified based on animal type and category. 4.2 Livestock are prepared for breeding as per livestock production manual. 4. 3 Livestock are bred in accordance with livestock production manual
5. Practice livestock husbandry	5.1 Livestock structures requirement are adhered to according to animal species specified in LPM. 5.2 Livestock are housed based on LPM. 5.3 Livestock structures are cleaned, disinfected or fumigated as per LPM. 5.4 Personal protective equipment is adhered to as per occupation safety and health standards 5.5 Bio-security measures are adhered to according to animal disease handbook and LPM
6. Manage young and growing stocks	1.1 Young stocks are weighed as per manufacturer's specification. 1.2 Young stocks are fed as per the guidelines in LPM 1.3 Young stock is weaned following procedures stipulated in LPM. 1.4 Young stocks are housed according to breed and age as per LPM 1.5 Growing stock are housed separately as per LPM 1.6 Growing stocks are fed according to the feeding standards as per feeding standards tables. 1.7 Fully grown stocks are assessed for breeding in accordance with LPM

RANGE OF VARIABLES

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

	RANGE	VARIABLE
1.	Breeding methods may include but not limited to:	• Natural mating • Artificial breeding • Embryo transfer • Cross breeding • Inbreeding etc.
2.	selection methods may include but not limited to:	• Mass selection • Progeny testing • Family selection • Pedigree • Multiple trait selection

		· Tandem
		· Independent culling levels
		· Index selection
3.	Animal structures	· Calf pen
		· Zero-grazing unit
		· Crutch
		· Pig sty
		· Deep litter house
		· Weigh bridge
		· Dips / spray race etc.
4.	Livestock routine management practices	· Feeding and watering
		· Milking
		· Spraying
		· Drenching
		· Hoof trimming
		· Dehorning or disbudding
		· Teeth clipping
		· Shearing
		· Cleaning and disinfection etc.
5.	Personal protective equipment	· Overall or over coat
		· Gumboots
		· Gloves
		· Head gear
		· Face mask etc.
6.	Bio-security measures	· Personal hygiene
		· Fencing
		· Quarantine
		· Foot baths
		· Prevention of intruders in animal houses
		· Cleaning and disinfection etc.

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit of competency.
Required Skills
The individual needs to demonstrate the following skills:
- Breed assessment
- Handling tools and equipment
- Animal breeding
- animal structure design
- Construction
- Installation
- Animal handling

- weighing
- feeding
- animal assessment

Required knowledge

The individual needs to demonstrate knowledge of:

- Types of breeds
- Animal behavior
- Types of livestock
- Farm animal structures designs
- Procurement
- Maintenance of tools and equipment.
- Measurement
- Construction
- Knowledge in tool, equipment and machines
- Animals production
- Handling of animals
- Preparing animals for breeding
- Animal measurement
- Breeding behavior
- Pre-breeding feeding
- Environment hygiene and safety
- Animal health {Parasite control, vaccination and deworming.}
- Types of livestock structures
- Livestock structures hygiene and safety
- Types of personal protective equipment
- Bio-security measures
- Weighing young stock
- Weaning procedures
- Housing
- Assessment of growing stock for breeding.
- Feeding young and growing stock.
- Types of feeds for different animal species

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: Demonstrated: 1.1 Ability to choose breeding stocks 1.2 Understanding of breeding methods 1.3 Ability to select breeds 1.4 Ability to design animal structures

		1.5 Ability to construct animal structures 1.6 Ability to install and maintain animal tools and equipment 1.7 Ability to carry out livestock routine management practices 1.8 Ability to use personal protective equipment 1.9 Understanding of bio-security measures
2.	Resource implication	The following resources should be provided: 2.1 Materials, tools and equipment 2.2 Assessment location 2.3 Personal protective equipment 2.4 Various types livestock
3.	Method of assessment	Competency in this unit may be assessed through: 3.1 Projects 3.2 Observation 3.3 Written tests 3.4 Questionnaires 3.5 Oral questioning
4.	Context of assessment	4.1 Competency elements must be assessed in a safe working environment 4.2 Assessment may be conducted in a workplace or simulated environment
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

MANAGE SOIL AND WATER RESOURCES

UNIT CODE: AGR/OS/EXT/CR/02/6/A

UNIT DESCRIPTION

This unit specifies competencies required to manage soil and water resources.

It involves assessment of area topography, conserve soil fertility, conserve farm water, Design soil and water conservation structures, lay out soil and water structures, carry out farm irrigation, carry out farm water drainage, harvest farm water, manage waste water disposal, manage water supply and prepare soil and water resources management report.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range.*
1. Assess area topography	1.1 Area topography to be assessed is mapped out according to guidelines stipulated in soil and water conservation manual. 1.2 Area topography is assessed in accordance to soil and water conservation manual 1.3 Assessed area topography is documented as per soil and water conservation manual 1.4 Area topography is assessed for land use viability according to soil and water conservation manual.
2. Conserve soil fertility	2.1 Soil is sampled for fertility testing following the procedures as per soil conservation handbook. 2.2 Soil is tested for nutrients element as per soil laboratory manual. 2.3 Soil tests results are recorded as per soil laboratory manual. 2.4 Soil fertility is improved through organic farming as per organic farming manual. 2.5 Soil fertility improvements recommendations are given as per soil laboratory manual.
3. Conserve farm water	3.1 Farm *water sources* are identified as per soil and water conservation manual 3.2 Farm water conservation methods are identified as per soil and water conservation manual. 3.3 Farm water conservation structures are constructed as per soil and conservation manual 3.4 Conserved farm water is taken care of to minimize wastage as per soil and water conservation handbook
4. Design soil and water	4.1 soil and water conservation structures are identified as per soil and water manual

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conservation structures	4.2 Soil and water conservation structures are designed as specified in soil and water conservation manual
5. Lay out soil and water structures	5.1 Area layout is established as per soil and water conservation manual 5.2 Established area is pegged as per soil and water conservation manual 5.3 Pegged area is measured as per size and type of structure to be constructed 5.4 Area is excavated as per structure design 5.5 Soil and water structures are maintained as per good agricultural practices.
6. Carry out farm irrigation	6.1 Irrigation methods are identified as per soil and water conservation manual 6.2 Identified irrigation methods are carried out as per soil and water conservation manual
7. Carry out farm water drainage	7.1 Farm drainage systems are identified as per farm plan 7.2 Water drainage systems are constructed as per farm plan 7.3 Water drainage system is maintained as per environmental management plan
8. Harvest farm water	8.1 Farm water harvesting methods are identified as per soil and water conservation manual 8.2 Water harvesting structures are constructed as per soil and water conservation manual 8.3 Water harvesting structures are maintained as per environmental management plan
9. Manage waste water disposal	9.1 Waste water disposal methods are identified as per waste water management manual 9.2 Waste water disposal structures are identified as per waste water management manual 9.3 Waste water management structures are constructed as per waste water management manual
10. Manage water supply	10.1 Sources of water are identified as per water supply and maintenance manual 10.2 water supply methods are identified as per water supply and maintenance manual 10.3 water supply systems are installed as per water supply and maintenance manual
11. Prepare soil and water resources	11.1 Data on soil and water resources is collected as per user needs 11.2 Data on soil and water resources is analyzed as per standard data analysis tools

management report	11.3 Data analysis result are recorded

RANGE OF VARIABLES

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

RANGE	VARIABLE
1. Water sources may include but not limited to:	• Wells • Springs • Rain water • Dams • Rivers • Lakes etc.
2. Water conservation methods may include but not limited to:	• Roof catchment • road runoff • rock catchment
3. Water conservation structures may include but not limited to:	• Dams • Water tanks • Wells • Water pans • Cutoff drains • Gulley control

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Mapping
- Documentation
- handling soil fertility testing equipment
- Collecting soil samples
- Performing simple soil testing
- Composting
- Manure and fertilizer application

- Conserving water
- Construction water conservation structures
- Designing
- laying
- Installation
- Construction of drainage systems
- Construction of waste water disposal structures
- Waste water re-cycling
- reporting
- Measuring

Required knowledge

The individual needs to demonstrate knowledge of:
- Assessment
- Mapping
- Documentation -procedures
- Land use categories
- Knowledge on organic farming
- Handling soil sampling equipment.
- Soil testing methods
- Soil properties
- Soil science
- Soli nutrients
- Manure and fertilizer application
- Sources of water
- Conservation methods
- Conservation structures
- Construction of water conservation structures
- Water use
- Water conservation structures
- Design water conservation structures
- Laying out of soil and water conservation structure
- Irrigation methods
- Installation of irrigation structures
- Types of drainage systems
- Construction of drainage systems
- Water harvesting methods
- Construction of water harvesting structures
- waste water disposal methods
- Waste water disposal structures
- Construction of waste water disposal structures
- Sources of water

- Water supply methods
- Installation of water supply systems
- Report writing

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: Demonstrated: 1.1 Ability to assess area topography 1.2 Understanding of soil nutrients 1.3 Ability to calculate fertilizer requirements 1.4 Ability to test soil fertility 1.5 Understanding of farm water sources 1.6 Understanding of water conservation methods 1.7 Ability to design and construct farm water structures 1.8 Ability to lay out soil and water conservation structures 1.9 Understanding of irrigation methods 1.10 Ability to irrigate farm 1.11 Understanding of drainage systems 1.12 Ability to carry water drainage 1.13 Ability to harvest farm water 1.14 Ability Manage waste water disposal 1.15 Ability to Manage water supply 1.16 Ability to prepare soil and water resources management report
2. Resource implication	The following resources should be provided: 2.1 Materials, tools and equipment 2.2 Assessment location
3. Method of assessment	Competency in this unit may be assessed through: 3.1 Projects 3.2 Observation 3.3 Written tests 3.4 Questionnaires 3.5 Oral questioning
4. Context of assessment	4.1 Competency elements must be assessed in a safe working environment 4.2 Assessment may be conducted in a workplace or simulated environment 4.3 During industrial attachment
5. Guidance	Holistic assessment with other units relevant to the industry sector,

information for assessment	workplace and job role is recommended.

FORMULATE LIVESTOCK FEEDS

UNIT CODE: AGR/OS/EXT/CR/03/6/A

UNIT DESCRIPTION
This unit specifies competencies required to produce and formulate livestock feeds. It involves determination of animal nutrition requirements, calculating livestock feed ratios, producing animal feed and feedstuffs, processing animal feedstuff, animal feedstuffs mixing, packaging animal feed and storing animal feed.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Determine animal nutrition requirements	1.1. Animals are categorized as per breed, age, production level and physiological status of the animal 1.2. Feed requirements are determined as per feeding standard tables
2. Formulate Livestock feed ration,	2.1. ***Animal feeds ingredients*** are identified as per animal feeding standard tables. 2.2. ***Livestock feed ingredient rations*** are formulated using formulas or computer programs as per animal feeding standard tables
3. Produce animal feed and feedstuffs	3.1. Propagation materials are sourced as per agro-ecological zone 3.2. Land is prepared as per planting material requirements 3.3. Propagated materials are established as per good agricultural practices 3.4. Fodder crops are managed as per good agricultural practices 3.5. Fodder crops are harvested as per maturity index and height
4. Process animal feedstuff	4.1. Animal feeds ingredient are procured as per type of feed to be formulated 4.2. Ingredient proportions are weighed as per feed formulation formula 4.3. Ingredients are mixed as per feed formulation formula 4.4. Feed is analyzed as per standardization requirements. 4.5. Animal feeds are packaged as per market requirements 4.6. Animal feeds are stored as per occupation safety standards

RANGE OF VARIABLES

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

RANGE	VARIABLE
1. Animal feeds ingredients may include but not limited to:	• Maize germ • Fish meal • Sunflower cake • Soy bean meal • Cotton seed cake • Premixes • Lime /D.C.P
2. Livestock feed ingredient rations may include but not limited to:	• Maintenance ration • Steaming ration • Production ration • Starter rations • Finisher rations
3. Animal feedstuffs may include but not limited to:	• Hay • Silage • Dairy meal • Bran • Chicken feeds • Pig feeds • Dog meal

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:
- Measuring
- ICT skills
- Mixing
- Packaging
- Storing

Required knowledge

The individual needs to demonstrate knowledge of:
- Animal nutrition requirements
- Feed ingredients that supply nutrients required
- Sources of quality feed ingredients
- Calculation of animal feed ratios

- Computer programs
- Types of feeds and feedstuffs
- Animal nutrition
- Procurement
- Agricultural economics (cost benefit analysis)
- Animal feedstuffs processing
- Animal feedstuffs mixing techniques
- Packaging
- Standard bodies e.g. KEBS
- Feeds storage structures
- Feed storage conditions
- Characteristics of a good store

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: Demonstrated:
	1.1 Understanding of animal feed ingredients
	1.2 Ability to formulate livestock feed rations
	1.3 Understanding of feed stuffs
	1.4 Ability to prepare land
	1.5 Ability to establish fodder crops
	1.6 Ability to manage fodder
	1.7 Understanding of harvesting
	1.8 Ability to weigh ingredients needs
	1.9 Ability to analyze animal feeds
	1.10 Ability to package animal feeds
	1.11 Understanding of storage methods and conditions
2. Resource Implication	The following resources should be provided: •
3. Method of assessment	Competency in this unit may be assessed through: 3.1 Projects 3.2 Observation 3.3 Written tests 3.4 Oral questioning 3.5 Demonstration
4. Context of assessment	4.1 Competency elements must be assessed in a safe working environment 4.2 Assessment may be conducted in a workplace or simulated environment 4.3 During Industrial attachment

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

PROCESS FARM PRODUCTS

UNIT CODE: AGR/OS/EXT/CR/04/6/A

UNIT DESCRIPTION

This unit specifies competencies required to process farm products (Agro-processing) / (value addition). It involves identification of products for value addition, determine technology/machines and equipment to use, process products to flour and flour products, process vegetables into juice and vegetable products, process fruit into juice, wine and products, process herbal products, process animal products (milk, pork, beef, chicken, fish, rabbit and bee products), process animal products (milk, pork, beef, chicken, fish, rabbit and bee products) and Package processed products.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Identify products for value addition	1.1 Products for value additions *are* chosen as per perishability and customer preference 1.2 Products for value addition are sourced as per product value requirement
2. Determine technology/machines and equipment to use	2.1 Products to be processed are identified as per client requirement 2.2 ***Technology used*** is determined as per product type 2.3 The machines or equipment used are determined as per technology of value addition used.
3. Process products to flour and flour products	3.1 Products are milled into flour in accordance to miller's association guidelines and KEBS specifications. 3.2 ***Flour products*** are prepared as per recipe manual
4. Process vegetables into juice and vegetable products	4.1 Vegetables to process into juice are identified as per horticulture technical manual 4.2 vegetables are processed into ***juice*** and products as per juice making recipes manual 4.3 Vegetables are dried and grounded into powder as per value addition manual
5. Process fruit into juice, wine and products	5.1 Fruits to process into juice are identified as per horticulture technical manual 5.2 Fruits are processed into juice and products as per juice making recipes manual 5.3 Fruits are made into slices and dried as per value addition manual 5.4 Fruits are processed and fermented into wine as per SOPs
6. Process Herbal	6.1 Herbs are identified as per small scale horticultural development

	products	programme manual
		6.2 herbs are processed into herbal products
7.	Process animal products	7.1 *Animal products* are identified as per livestock production manual
		7.2 Animal products are processed as per livestock products value addition manual
		7.3 Processed products are packaged and labeled as per standardization requirement.

RANGE OF VARIABLES

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

	RANGE	VARIABLE May include but not limited to:
1.	Products may include but not limited to:	• Bananas • Millet • Wheat • Moringa • Stinging nettle • Amaranths • Macadamia
2.	Technology used may include but not limited to:	• Milling • Grounding • Solar drying • Blending • Hulling
3.	Flour products may include but not limited to:	• Bread • Biscuits • Cakes • Soap
4.	Juices may include but not limited to:	• Wine • Fruit juice • Vegetable juice
5.	Animal products may include but not limited to:	• Yoghurt • Mala • Cheese • Butter • Sausage • Leather

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

Required Skills
The individual needs to demonstrate the following skills:
- Value adding
- Machine use

Required knowledge
The individual needs to demonstrate knowledge of:
- Value addition technologies
- Type of machines and equipment for value addition
- Human nutrition
- Milling process
- Types of flour and flour products
- waste disposal
- Types of vegetables (local and exotic)
- vegetable processing methods
- Vegetable drying procedures
- handling value addition equipment
- Personal hygiene
- Climate change
- crisps making
- Waste disposal
- Types of fruits (local and exotic)
- Fruits processing methods
- Fruits drying procedures
- handling value addition equipment
- Personal hygiene
- Climate change
- wine making procedures
- Types of herbs
- Herbal products
- Herbs processing technologies and procedures
- Types of animal products to be processed
- Yoghurt, mala, cheese, butter, ice cream, UHT, and sweetened milk making
- Pork, beef, chicken, fish and rabbit value addition
- honey and wax processing
- Packaging methods
- packaging machines
- Packaging materials
- Personal hygiene

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: Demonstrated: 1.1 Understanding of the types of products use 1.2 Understanding the type of technology to be used 1.3 Understanding product quality control products 1.4 Understanding of occupational health standards 1.5 Ability to use the technology 1.6 Ability to make a product
2. Resource implication	The following resources should be provided: 2.1 Raw materials 2.2 Tools and equipment 2.3 Recipes
3. Method of assessment	Competency in this unit may be assessed through: 3.1 Projects 3.2 Observation 3.3 Written tests 3.4 Questionnaires 3.5 Oral questioning 3.6 Demonstration
4. Context of assessment	4.1 Competency elements must be assessed in a safe working environment 4.2 Assessment may be conducted in a workplace or simulated environment 4.3 During industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

PROTECT CROP

UNIT CODE: AGR/OS/EXT/CR/05/6/A

UNIT DESCRIPTION

This unit specifies the competencies required to carry out crop protection. It involves Carrying out disease and pest surveillance, identifying method of pest and disease control, procuring, transport and storing farm pesticides, controlling crop/pests' diseases, disposing expired chemical and empty containers and preparing crop protection report

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the **key outcomes** which make up **workplace function**.	These are **assessable** statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the range.*
1. Carry out disease and pest surveillance	1.1 Pest scouting is done as per crop scouting manual 1.2 Disease control area / plot is identified according to Farm plan
2. Identify method of pest and disease control	2.1 ***Pests and diseases*** to be controlled are identified as per Crop Scouting Manual 2.2 Affected areas/plots are mapped in accordance with type of pest/ disease 2.3 ***Pest/disease control method*** is determined based on type of pest/disease identified 2.4 Material supplies, tools and equipment are identified, verified and calibrated as per method
3. Manage farm pesticides	3.1 Farm pesticides are procured based on type of pest/disease identified, mapped out areas and farm procurement procedures 3.2 Pesticide is transported in accordance with types of pesticides best practices 3.3 Farm pesticides are stored in accordance with OSH standards, manufacturer's manual and work place policy 3.4 Farm pests are recorded as per SOPs
4. Control crop/pest diseases	4.1 PPEs requirements are adhered to as per OSH Standards 4.2 Materials, Tools and equipment to be used are identified as per the chosen methods. 4.3 Material tools and equipment are used as per the instructions manual. 4.4 Pest/diseases is controlled as per pest/ disease identified and mapped area.
5. Dispose expired	5.1 Waste and ***recyclable materials*** are collected and sorted

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	chemical and empty containers	according to OSH standards and workplace policy 5.2 Expired chemicals are disposed in accordance with workplace policy, manufacturer's instructions and OSH Standards 5.3 Tools and equipment are cleaned and stored as per manufacturers manual 5.4 *First aids skills* are demonstrated in accordance with Safe Use of Pesticide Manual
6.	Prepare crop protection report	6.1 Crop pest/disease situation report is prepared as per SOPs 6.2 Crop pest/disease report is shared as per SOPs 6.3 Crop protection schedules/activities are prepared and documented in the journal

RANGE

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

Range	Variables
1. Pests and diseases may include but not limited to:	- Insects - Birds - Mammals - Nematodes - Physiological - Fungal diseases - Bacterial diseases - Viral diseases
2. Pest/disease control method may include but not limited to:	- Cultural methods - Biological - Chemical - IPM - ITK - Physical
3. Recyclable materials may include but not limited to:	- Plastics - Paper
4. First aids skills may include but not limited to:	- Cleaning - Anti-dote - Resuscitation

REQUIRED KNOWLEDGE AND UNDERSTANDING
The individual needs to demonstrate knowledge and skills
SKILLS
The individual needs to demonstrate the following skills:

KNOWLEDGE
The individual needs to demonstrate the following knowledge:
- Disease and pest's symptoms
- Dispose expired chemical and empty containers
- Methods of pests and disease control
- Environmental protection guidelines
- First aid
- Safe use of pesticide
- Pesticide transportation
- Pesticide storage
- Recording farm pests
- Integrated pest management
- Indigenous technical knowledge
- Pest and disease resistant cultivars
- Maintaining tools and equipment
- Situation reporting
- Crop protection scheduling

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: Demonstrated: • Understanding pests and diseases • Ability to map out infected areas • Understanding pests and disease control methods • Ability to observe safety measures • Ability to use tools and equipment • Ability to dispose surplus materials
2. Resource Implications	The following resources must be provided: • Assessment location • Personal protective equipment

		• Tools, equipment and materials
3.	Methods of Assessment	Competency may be accessed through: • Written tests • Oral questioning • Third party reports • Case studies
4.	Context of Assessment	Competency may be assessed: • On the job • Off the job • In work placement (attachment) Off the job assessment must be undertaken in a closely simulated workplace environment
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry subsector, workplace and job roles is recommended.

PRODUCE HORTICULTURAL CROPS

UNIT CODE: AGR/OS/EXT/CR/06/6/A

UNIT DESCRIPTION

This unit specifies competencies required to produce horticultural crops. It involves determining horticultural crops to produce, procuring horticultural crop planting material, managing horticultural crop nursery, managing horticulture Green Houses, managing drip irrigation system, managing horticultural field and managing horticulture post-harvest.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range.*
1. Determine horticultural crops to produce	1.1 Soil sampling is undertaken as per required crop. 1.2 *Horticultural crops* are selected in accordance with the farm plan, land, Agro Ecological Zone EAZ.
2. Procure Horticultural crop planting material	2.1 *Sources* of horticultural crop planting material are identified in accordance with SOPs 2.2 *Horticultural crop planting materials* are selected as per type of crop, quality,
3. Manage Horticultural crop nursery	3.1 Nursery site is selected as per quality of soil, availability of fresh water, landscape, accessibility and wind breaks 3.2 Horticultural crop is propagated in accordance with the kind of plant 3.3 *Horticultural crop nursery layout* is determined per number of seedlings and production system 3.4 *Growing media* is prepared as per GAPs 3.5 Nursery plans are designed as per conveniences in operations 3.6 Horticultural plant nursery area is cleaned in accordance with horticultural 3.7 Horticultural crop production schedule is prepared as per requirements
4. Manage Horticulture Green Houses	4.1 Green house site is selected in accordance with crop variety and value, wind, security and GAP 4.2 Green house structure is designed as per farm plan 4.3 Green house working tools are determined as per GAP 4.4 *Green house crop* selection is done in accordance with GAPs 4.5 Green house nursery propagation is undertaken in accordance with GAPs 4.6 Green house field preparation is undertaken in accordance to GAP 4.7 Green house irrigation is carried out as per Operations and Maintenance Manual

	4.8	Greenhouse crop water requirement is maintained as per Crop Water Requirement Manual
5. Establish drip irrigation system	5.1	Drip irrigation is designed as per client specifications
	5.2	Lay out of the drip irrigation is set out in accordance with Operations Manual
	5.3	Green house crop market is determined as per consumer projected needs
	5.4	Drip irrigation is established as per Operations Manual
	5.5	Drip irrigation activities are planned, coordinated and controlled as per farm requirements and SOPs
	5.6	Drip irrigation system is maintained as per the Operations Manual
	5.7	Drip irrigation materials, tools and equipment are used as per Operations Manual activities
	5.8	Drip irrigation is monitored and evaluated as per the Operational Manual
	5.9	Training programmes are prepared and implemented as per SOPs
	5.10	Drip irrigation reports prepared and shared as per SOPs
	5.11	Green house crop harvest is timed with peak seasons
6. Manage Horticultural field	6.1	Horticultural farm is established in accordance with Horticultural Crop Production Manual
	6.2	*Soil nutrition* requirement for horticultural crop is determined and enhanced
	6.3	Horticultural crops are established as per crop extension hand book
	6.4	Horticultural crop husbandry is undertaken as per Crop Extension Manual and GAPs
	6.5	Horticultural crop is harvested in accordance with GAPs
	6.6	Horticultural crop post harvesting management is undertaken as per Post Harvest Handling Manual
7. Horticulture post-harvest management	7.1	Horticultural crop safety and quality is adhered to as per Post Harvest Manual
	7.2	Pest control is undertaken in accordance with Post Harvest Manual
	7.3	Horticulture crop storage is undertaken in accordance with Post Harvest Manual
	7.4	Marketing opportunities are determined as per farm marketing strategy

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

RANGE	VARIABLE
1. Horticultural crops may include but not limited to:	• Fruits • Vegetables • Flowers • Herbs and spices • Nuts
2. Sources may include but not limited to:	• Nurseries • Agro vet –shops
3. Horticultural crop planting materials may include but not limited to:	• Cuttings • Vines • Seeds / seedlings
4. Horticultural crop nursery lay out may include but not limited to:	• Raised beds • Sunken beds • Trays

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

Required Skills
The individual needs to demonstrate the following skills:
- Disease and pest scouting
- Recording
- Handling tools and equipment
- Use of PPEs
- Manual dexterity
- Measuring
- Recording
- First aid
- Sourcing
- Disease and pest scouting
- Measuring
- Weeds and weeds control
- Hydroponics
- Budgeting
- General crop production
- Soil sampling
- Planting
- Fertilizer handling

- Calibration of machines and equipment
- Post-harvest technic
- Servicing and maintenance of tools and machines

Required knowledge

The individual needs to demonstrate knowledge of:
- Selection of Horticultural crops
- Soil sampling
- Sources of Horticultural crop planting material
- Nursery selection
- Propagation
- Germination media
- Layout and practices
- Production
- Plant protection
- Environmental protection guidelines
- Disease and pest symptoms and their control
- Green house site selection
- GAPs
- Designing greenhouse structure
- Green house working tools
- Green house nursery
- Green house field preparation
- Green house crop water requirements
- Drip irrigation
- Layout of Drip irrigation
- Establishing green irrigation
- Planning coordinating drip irrigation
- Drip irrigation materials
- Drip irrigation monitoring and evaluation
- Drip irrigations training programme
- Green house crop harvesting
- Soil nutrition
- Methods of manure and fertilizer application
- Basic machine operations
- Crop maturity indices
- Harvesting methods
- Health hygiene safe environment
- Crop safety and quality
- Pest control
- Horticulture crop post-harvest
- Determining marketing strategy

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EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: Demonstrated: 1.1 Understanding of different horticultural crops. 1.2 Understanding of different horticultural planting materials. 1.3 Ability to establish a horticultural crop nursery. 1.4 Ability to manage horticultural crop nursery.
2. Resource Implication	The following resources should be provided: 2.1 Materials, tools and equipment 2.2 Personal protective equipment 2.3 Assessment location
3. Method of assessment	Competency in this unit may be assessed through: 3.1 Projects 3.2 Observation 3.3 Written test 3.4 Third party reports 3.5 Case study
4. Context of assessment	4.1 Competency elements must be assessed in a safe working environment 4.2 Assessment may be conducted in a workplace or simulated environment 4.3 During Industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

MANAGE FARM

UNIT CODE: AGR/OS/EXT/CR/07/6/A

UNIT DESCRIPTION
This unit specifies competencies required in managing agricultural and livestock farm. It involves; preparing farm strategic plan, managing human resources and managing farm finances.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. *Bold and italicized terms are elaborated in the Range.*
1. Prepare Farm Strategic Plan	1.1 *Farm activities* are identified as per farm plan 1.2 *Farm budgets* are prepared as per the activity schedule 1.3 *Sources of funds* are done as per budget prepared.
2. Manage Farm personnel	2.1 Personnel are sourced as per farms procedures and requirements 2.2 Performance management resources, learning and development of personnel is coordinated in line with farm human resource policy. 2.3 Farm personnel budget is prepared as per accounting procedures 2.4 Internal and external communication is undertaken in accordance with farm communication Strategy. 2.5 Compliance with Legislation and SOPs is enforced per identified laws and regulations
3. Manage Farm finances	3.1 Farm budget is prepared in accordance with enterprise requirements 3.2 Financial priorities are identified in accordance with farm budget 3.3 Financial operations are monitored and controlled in accordance with SOPs 3.4 *Financial records* are maintained as per SOPs

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

RANGE	VARIABLE
1. Farm activities may include but not limited to:	• Land preparation • Planting • Weed control / pest control products

		• Harvesting
		• Construction of farm structures
		• Livestock and farm inputs
2. Farm budgets may include but not limited to:		• Purchase of equipment and tools
		• Purchase farm and livestock inputs
		• Salaries and wages
		• Operational and Maintenance costs
		• Transport costs
3. Sources of funds may include but not limited to:		• Savings
		• Bank loans
4. Financial records may include but not limited to:		• Budgets
		• Bank statements

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

Required Skills
The individual needs to demonstrate the following skills:
- ICT
- Organization
- Recording
- Weighing

Required knowledge
The individual needs to demonstrate knowledge of:
- Types of livestock breed records
- Filling and documentation
- ICT
- Procurement
- Accounting
- Farm records

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

1. Critical aspects of competency	Assessment requires evidence that the candidate:
	Demonstrated:
	1.5 Understanding of farm activities.
	1.6 Ability to prepare a farm budget.
	1.7 Understanding of sources of funds.

		1.8 Ability to prepare financial records.
2.	Resource Implication	The following resources should be provided: 2.4 Tools and equipment

3.	Method of assessment	Competency in this unit may be assessed through:
		    3.6 Observation
		    3.7 Projects
		    3.8 Written test
		    3.9 Oral tests

4.	Context of assessment	4.1 Competency elements must be assessed in a safe working environment 4.2 Assessment may be conducted in a workplace or simulated environment 4.3 During Industrial attachment
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.