



REPUBLIC OF KENYA

COMPETENCY BASED CURRICULUM

FOR

AGRICULTURAL EXTENSION

LEVEL 6



TVET CDACC
P.O. BOX 15745-00100
NAIROBI

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FOREWORD

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

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of 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 this curriculum has been developed.

It is my conviction that this curriculum will play a great role towards development of competent human resource for the Agricultural Sector's growth and development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING
MINISTRY OF EDUCATION**

PREFACE

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

The Technical and Vocational Education and Training Act No. 29 of 2013 and Sessional Paper No. 4 of 2016 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET 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.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Agricultural Sector Skills Advisory Committee (SSAC) have developed this curriculum.

This curriculum has been developed following the CBET framework policy; the CBETA standards and guidelines provided by the TVET Authority and the Kenya National Qualification Framework designed by the Kenya National Qualification Authority.

This curriculum is designed and organized with an outline of learning outcomes; suggested delivery methods, training/learning resources and methods of assessing the trainee’s achievement. The curriculum is competency-based and allows multiple entry and exit to the course.

I am grateful to the Council Members, Council Secretariat, Agricultural SSAC, expert workers and all those who participated in the development of this curriculum.

**CHAIRPERSON,
TVET CDACC**

ACKNOWLEDGMENT

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support was received from various organizations.

I recognize with appreciation the role of the Agricultural Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in the curriculum. I also thank all stakeholders in the credit management sector for their valuable input and all those who participated in the process of developing this curriculum.

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

**COUNCIL SECRETARY/CEO
TVET CDACC**

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ABBREVIATION AND ACRONYMS

BC	: Basic Competency
CC	: Core Competency
CDACC	: Curriculum Development Assessment and Certification Council
CO	: Common Units
CU	: Curriculum
KCSE	: Kenya Certificate of Secondary Education
KNQA	: Kenya National Qualifications Authority
OSHA	: Occupation Safety and Health Act
PPE	: Personal Protective Equipment
SOP	: Standard operating procedures
SSAC	: Sector Skills Advisory Committee
TVET	: Technical and Vocational Education and Training

KEY TO UNIT CODE

AGR / CU/EXT/ BC/01/6/A A

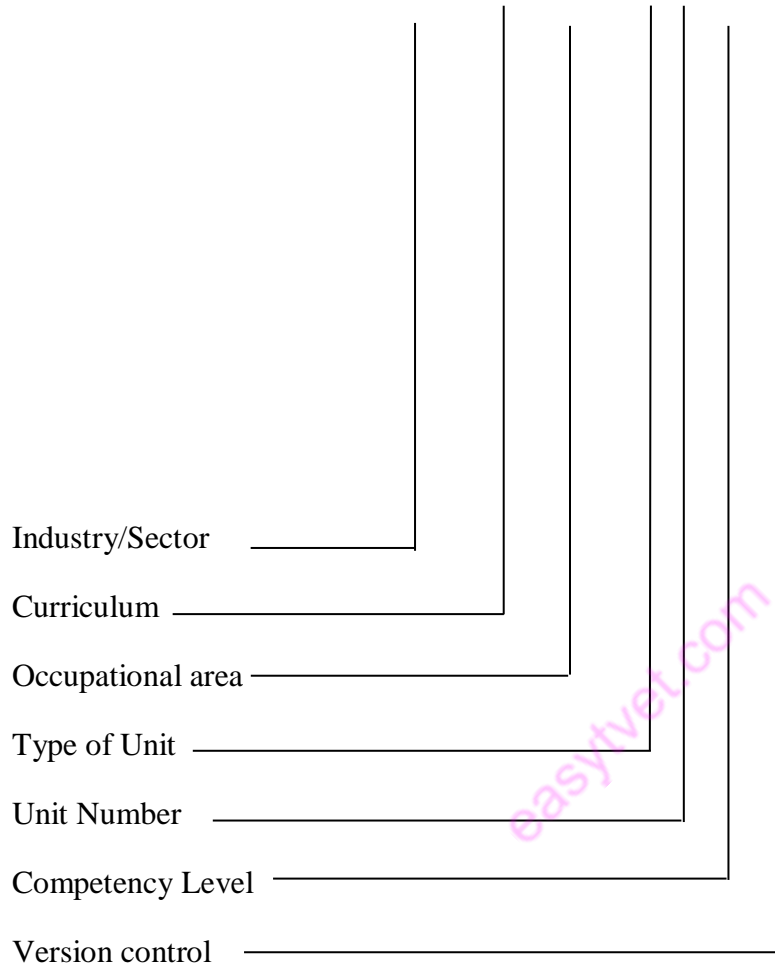


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COURSE OVERVIEW

The Agricultural Extension Level 6 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.

This course consists of Basic, Common units and Core units of learning as indicated below:

Basic Units of Learning

Unit of Learning Code	Unit of Learning Title	Duration in Hours	Credit Factor
AGR/CU/EXT/BC/01/6/A	Communication skills	40	4.0
AGR/CU/EXT/BC/02/6/A	Occupational safety and health practices	50	5.0
AGR/CU/EXT/BC/03/6/A	Numeracy skills	70	7.0
AGR/CU/EXT/BC/04/6/A	Digital literacy	80	8.0
AGR/CU/EXT/BC/05/6/A	Entrepreneurial skills	80	8.0
AGR/CU/EXT/BC/06/6/A	Employability skills	60	6.0
AGR/CU/EXT/BC/07/6/A	Environmental literacy	40	4.0
Total		420	42.0

Common unit of learning

Unit of Learning Code	Unit of Learning Title	Duration in Hours	Credit Factor
AGR/CU/EXT/CC/01/6/A	Agricultural extension and rural sociology	180	18.0
Total		180	18.0

Core units of learning

Unit of Learning Code	Unit of Learning Title	Duration in Hours	Credit Factor

AGR/CU/EXT/CR/01/6/A	Conventional and non-conventional livestock production	170	17.0
AGR/CU/EXT/CR/02/6/A	Soil and water resources management	190	19.0
AGR/CU/EXT/CR/03/6/A	Livestock feeds formulation	180	18.0
AGR/CU/EXT/CR/04/6/A	Farm products processing	210	21.0
AGR/CU/EXT/CR/05/6/A	Crop Protection	220	22.0
AGR/CU/EXT/CR/06/6/A	Horticultural crop production	200	20.0
AGR/CU/EXT/CR/07/6/A	Manage farm	150	15.0
	Industrial Attachment	480	48.0
Total		1800	180.0

Entry Requirements

An individual entering this course should have any of the following minimum requirements:

a) Agricultural Extension Craft Certificate Level 5

Or

b) Kenya Certificate of Secondary Education (KCSE) C- (minus)

Or

c) Equivalent qualifications as determined by Kenya National Qualifications Authority (KNQA)

Trainer qualification

A trainer for this course should have a higher qualification than the level of this course.

Assessment

The course will be assessed at two levels: internally and externally. Internal assessment is continuous and is conducted by the trainer who is monitored by an accredited internal verifier while external assessment is the responsibility of TVET CDACC.

Certification

A candidate will be issued with a Record of Achievement for each Unit of Competency. To attain the qualification National Diploma Level 6 Agricultural Extension Officer, the candidate must demonstrate competence in all the units of competency as given in qualification pack. These certificates will be issued by TVET CDACC in conjunction with training provider.

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BASIC UNITS OF LEARNING

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COMMUNICATION SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Communication Skills

Duration of Unit: 40 hours

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.

Summary of Learning Outcomes

1. Meet communication needs of clients and colleagues
2. Develop communication strategies
3. Establish and maintain communication pathways
4. Promote use of communication strategies
5. Conduct interview
6. Facilitate group discussion
7. Represent the organization

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Meet communication needs of clients and colleagues	<ul style="list-style-type: none">• Communication process• Modes of communication• Medium of communication• Effective communication• Barriers to communication• Flow of communication• Sources of information• Organizational policies• Organization requirements for written and electronic communication methods• Report writing	<ul style="list-style-type: none">• Interview• Written texts

	<ul style="list-style-type: none"> • Effective questioning techniques (clarifying and probing) • Workplace etiquette • Ethical work practices in handling communication • Active listening • Feedback • Interpretation • Flexibility in communication • Types of communication strategies • Elements of communication strategy 	
2. Develop communication strategies	<ul style="list-style-type: none"> • Dynamics of groups • Styles of group leadership • Openness and flexibility in communication • Communication skills relevant to client groups 	<ul style="list-style-type: none"> • Interview • Written texts
3. Establish and maintain communication pathways	<ul style="list-style-type: none"> • Types of communication pathways 	<ul style="list-style-type: none"> • Interview • Written texts
4. Promote use of communication strategies	<ul style="list-style-type: none"> • Application of elements of communication strategies • Effective communication techniques 	<ul style="list-style-type: none"> • Interview • Written texts
5. Conduct interview	<ul style="list-style-type: none"> • Types of interview • Establishing rapport • Facilitating resolution of issues • Developing action plans 	<ul style="list-style-type: none"> • Interview • Written texts
6. Facilitate group discussion	<ul style="list-style-type: none"> • Identification of communication needs • Dynamics of groups • Styles of group leadership • Presentation of information • Encouraging group members participation 	<ul style="list-style-type: none"> • Interview • Written texts

	<ul style="list-style-type: none"> Evaluating group communication strategies 	
7. Represent the organization	<ul style="list-style-type: none"> Presentation techniques Development of a presentation Multi-media utilization in presentation Communication skills relevant to client groups 	<ul style="list-style-type: none"> Interview Written texts

Suggested Methods of Instruction

- Discussion
- Role playing
- Simulation
- Direct instruction

Recommended Resources

- Desktop computers/laptops
- Internet connection
- Projectors
- Telephone

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NUMERACY SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills.

Duration of Unit: 60 hours

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.

Summary of Learning Outcomes

1. Apply a wide range of mathematical calculations for work
2. Apply ratios, rates and proportions to solve problems
3. Estimate, measure and calculate measurement for work
4. Use detailed maps to plan travel routes for work
5. Use geometry to draw and construct 2D and 3D shapes for work
6. Collect, organize and interpret statistical data
7. Use routine formula and algebraic expressions for work
8. Use common functions of a scientific calculator

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Apply a wide range of mathematical calculations for work	<ul style="list-style-type: none">• Fundamentals of mathematics<ul style="list-style-type: none">▪ Addition, subtraction, multiplication and division of positive and negative numbers▪ Algebraic expressions manipulation• Forms of fractions, decimals and percentages• Expression of numbers as powers and	<ul style="list-style-type: none">• Written tests• Assignments• Supervised exercises

	roots	
2. Apply ratios, rates and proportions to solve problems	<ul style="list-style-type: none"> • Rates, ratios and proportions <ul style="list-style-type: none"> ▪ Meaning ▪ Conversions into percentages ▪ Direct and inverse proportions determination ▪ Performing calculations ▪ Construction of graphs, charts and tables ▪ Recording of information 	<ul style="list-style-type: none"> • Written tests • Assignments • Supervised exercises
3. Estimate, measure and calculate measurement for work	<ul style="list-style-type: none"> • Units of measurements and their symbols • Identification and selection of measuring equipment • Conversion of units of measurement • Perimeters of regular figures • Areas of regular figures • Volumes of regular figures • Carrying out measurements • Recording of information 	<ul style="list-style-type: none"> • Assignments • Supervised exercises • Written tests
4. Use detailed maps to plan travel routes for work	<ul style="list-style-type: none"> • Identification of features in routine maps and plans • Symbols and keys used in routine maps and plans • Identification and interpretation of orientation of map to North • Demonstrate understanding of direction and location • Apply simple scale to estimate length of objects, or distance to location or object • Give and receive directions using both formal and informal language • Planning of routes • Calculation of distance, speed and 	<ul style="list-style-type: none"> • Written • Practical test

	time	
5. Use geometry to draw and construct 2D and 3D shapes for work	<ul style="list-style-type: none"> • Identify two dimensional shapes and routine three-dimensional shapes in everyday objects and in different orientations • Explain the use and application of shapes • Use formal and informal mathematical language and symbols to describe and compare the features of two-dimensional shapes and routine three dimensional shapes • Identify common angles • Estimate common angles in everyday objects • Evaluation of unknown angles • Use formal and informal mathematical language to describe and compare common angles • Symmetry and similarity • Use common geometric instruments to draw two dimensional shapes • Construct routine three dimensional objects from given nets 	
6. Collect, organize and interpret statistical data	<ul style="list-style-type: none"> • Classification of data <ul style="list-style-type: none"> • Grouped data • Ungrouped data • Data collection <ul style="list-style-type: none"> • Observation • Recording • Distinguishing between sampling and census 	<ul style="list-style-type: none"> • Assignments • Supervised exercises • Written tests

	<ul style="list-style-type: none"> • Importance of sampling • Errors in sampling • Types of sampling and their limitations e.g. <ul style="list-style-type: none"> • Stratified random • Cluster • Judgmental • Tabulation of data <ul style="list-style-type: none"> • Class intervals • Class boundaries • Frequency tables • Cumulative frequency • Diagrammatic and graphical presentation of data e.g. <ul style="list-style-type: none"> • Histograms • Frequency polygons • Bar charts • Pie charts • Cumulative frequency curves • Interpretation of data 	
7. Use routine formula and algebraic expressions for work	<ul style="list-style-type: none"> • Solving linear equations • Linear graphs <ul style="list-style-type: none"> ▪ Plotting ▪ Interpretation • Applications of linear graphs • Curves of first and second degree <ul style="list-style-type: none"> ▪ Plotting ▪ Interpretation 	<ul style="list-style-type: none"> • Assignments • Supervised exercises • Written tests
8. Use common functions of a scientific calculator	<ul style="list-style-type: none"> • Identify and use keys for common functions on a calculator • Calculate using whole numbers, money and routine decimals and percentages • Calculate with routine fractions and percentages • Apply order of operations to solve multi-step calculations 	<ul style="list-style-type: none"> • • Written • Practical test

	<ul style="list-style-type: none">• Interpret display and record result	
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Suggested Methods of Instruction

- Group discussions
- Demonstration by trainer
- Practical work by trainee
- Exercises

Recommended Resources

- Calculators
- Rulers, pencils, erasers
- Charts with presentations of data
- Graph books
- Dice

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DIGITAL LITERACY

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

Duration of Unit: 60 hours

Unit Description

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

Summary of Learning Outcomes

1. Identify computer software and hardware
2. Apply security measures to data, hardware, software in automated environment
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace
5. Apply desktop publishing in official assignments
6. Prepare presentation packages

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Identify computer hardware and software	<ul style="list-style-type: none">• Concepts of ICT• Functions of ICT• History of computers• Components of a computer• Classification of computers	<ul style="list-style-type: none">• Written tests• Oral presentation
2. Apply security measures to data, hardware, software in automated environment	<ul style="list-style-type: none">• Data security and control• Security threats and control measures• Types of computer crimes• Detection and protection against computer crimes	<ul style="list-style-type: none">• Written tests• Oral presentation• Project

	<ul style="list-style-type: none"> • Laws governing protection of ICT 	
3. Apply computer software in solving tasks	<ul style="list-style-type: none"> • Operating system • Word processing • Spread sheets • Data base design and manipulation • Data manipulation, storage and retrieval 	<ul style="list-style-type: none"> • Oral questioning • Project
4. Apply internet and email in communication at workplace	<ul style="list-style-type: none"> • Computer networks • Network configurations • Uses of internet • Electronic mail (e-mail) concept 	<ul style="list-style-type: none"> • Oral questioning • Written report
5. Apply desktop publishing in official assignments	<ul style="list-style-type: none"> • Concept of desktop publishing • Opening publication window • Identifying different tools and tool bars • Determining page layout • Opening, saving and closing files • Drawing various shapes using DTP • Using color pellets to enhance a document • Inserting text frames • Importing and exporting text • Object linking and embedding • Designing of various publications • Printing of various publications 	<ul style="list-style-type: none"> • Oral questioning • Written report • Project
6. Prepare presentation packages	<ul style="list-style-type: none"> • Types of presentation packages • Procedure of creating slides • Formatting slides • Presentation of slides • Procedure for editing objects 	<ul style="list-style-type: none"> • Oral questioning • Written report • Project

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Suggested Methods of Instruction

- Instructor led facilitation of theory
- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Project
- Group discussions

Recommended Resources

- Computers
- Printers
- Storage devices
- Internet access

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ENTREPRENEURIAL SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

Duration of unit: 100 hours

Unit Description

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

Summary of Learning Outcomes

1. Demonstrate understanding of who an entrepreneur
2. Demonstrate knowledge of entrepreneurship and self-employment
3. Identify entrepreneurship opportunities
4. Create entrepreneurial awareness
5. Apply entrepreneurial motivation
6. Develop business innovative strategies
7. Develop Business plan

Learning Outcome	Content	Suggested Assessment Methods
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1. Demonstrate knowledge of entrepreneurship and self-employment	<ul style="list-style-type: none"> • Importance of self-employment • Requirements for entry into self-employment • Role of an Entrepreneur in business • Contributions of Entrepreneurs to National development • Entrepreneurship culture in Kenya • Born or made entrepreneurs 	<ul style="list-style-type: none"> • Individual/group assignments • Projects • Written tests • Oral questions • Third party report
2. Identify entrepreneurship opportunities	<ul style="list-style-type: none"> • Business ideas and opportunities • Sources of business ideas • Business life cycle • Legal aspects of business • Assessment of product demand • Business environment • Factors to consider when evaluating business environment • Technology in business 	<ul style="list-style-type: none"> • Individual/group assignments • Projects • Written tests • Oral questions • Third party report • Interviews
3. Create entrepreneurial awareness	<ul style="list-style-type: none"> • Forms of businesses • Sources of business finance • Factors in selecting source of business finance • Governing policies on Small Scale Enterprises (SSEs) • Problems of starting and operating SSEs 	<ul style="list-style-type: none"> • Individual/group assignments • Projects • Written tests • Oral questions • Third party report • Interviews
4. Apply entrepreneurial motivation	<ul style="list-style-type: none"> • Internal and external motivation • Motivational theories • Self-assessment • Entrepreneurial orientation • Effective communications in entrepreneurship • Principles of communication • Entrepreneurial motivation 	<ul style="list-style-type: none"> • Case studies • Individual/group assignments • Projects • Written tests • Oral questions • Third party report • Interviews

5. Develop business innovative strategies	<ul style="list-style-type: none"> • Innovation in business • Small business Strategic Plan • Creativity in business development • Linkages with other entrepreneurs • ICT in business growth and development 	<ul style="list-style-type: none"> • Case studies • Individual/group assignments • Projects • Written tests • Oral questions • Third party report • Interviews
1. Develop Business Plan	<ul style="list-style-type: none"> • Business description • Marketing plan • Organizational/Management plan • Production/operation plan • Financial plan • Executive summary • Presentation of Business Plan 	<ul style="list-style-type: none"> • Case studies • Individual/group assignments • Projects • Written tests • Oral questions • Third party report • Interviews

Suggested Methods of Instruction

- Direct instruction
- Project
- Case studies
- Field trips
- Discussions
- Demonstration
- Question and answer
- Problem solving
- Experiential
- Team training

Recommended Resources

- Case studies
- Business plan templates
- Computers
- Overhead projectors

- Internet
- Mobile phone
- Video clips
- Films
- Newspapers and Handouts
- Business Journals
- Writing materials

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EMPLOYABILITY SKILLS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate Employability Skills

Duration of Unit: 80 hours

Unit Description

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.

Summary of Learning Outcomes

1. Conduct self-management
2. Demonstrate interpersonal communication
3. Demonstrate critical safe work habits
4. Lead a workplace team
5. Plan and organize work
6. Maintain professional growth and development
7. Demonstrate workplace learning
8. Demonstrate problem solving skills
9. Manage ethical performance

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Conduct self-management	<ul style="list-style-type: none">• Self-awareness• Formulating personal vision, mission and goals• Strategies for overcoming life challenges• Managing emotions• Emotional intelligence• Assertiveness versus	<ul style="list-style-type: none">• Written tests• Oral questioning• Interviewing• Portfolio of evidence• Third party report

	<p>aggressiveness</p> <ul style="list-style-type: none"> • Expressing personal thoughts, feelings and beliefs • Developing and maintaining high self-esteem • Developing and maintaining positive self-image • Setting performance targets • Monitoring and evaluating performance • Articulating ideas and aspirations • Accountability and responsibility • Good work habits • Self-awareness • Values and beliefs • Self-development • Financial literacy • Healthy lifestyle practices • Adopting safety practices 	
2. Demonstrate interpersonal communication	<ul style="list-style-type: none"> • Meaning of interpersonal communication • Listening skills • Types of audience • Public speaking • Writing skills • Negotiation skills • Reading skills • Meaning of empathy • Understanding customers' needs • Establishing communication networks • Assertiveness • Sharing information 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence • Third party report
3. Demonstrate critical safe work habits	<ul style="list-style-type: none"> • Stress and stress management • Time concept 	<ul style="list-style-type: none"> • Written tests • Oral questioning

	<ul style="list-style-type: none"> • Punctuality and time consciousness • Leisure • Integrating personal objectives into organizational objectives • Resources mobilization • Resources utilization • Setting work priorities • Developing healthy relationships • HIV and AIDS • Drug and substance abuse • Managing emerging issues 	<ul style="list-style-type: none"> • Interviewing • Portfolio of evidence • Third party report
4. Lead a workplace team	<ul style="list-style-type: none"> • Leadership qualities • Power and authority • Team building • Determination of team roles and objectives • Team parameters and relationships • Individual responsibilities in a team • Forms of communication • Complementing team activities • Gender and gender mainstreaming • Human rights • Developing healthy relationships • Maintaining relationships • Conflicts and conflict resolution • Coaching and mentoring skills 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence • Third party report
5. Plan and organize work	<ul style="list-style-type: none"> • Functions of management • Planning • Organizing • Time management • Decision making concept 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence

	<ul style="list-style-type: none"> • Task allocation • Developing work plans • Developing work goals/objectives and deliverables • Monitoring work activities • Evaluating work activities • Resource mobilization • Resource allocation • Resource utilization • Proactive planning • Risk evaluation • Problem solving • Collecting, analyzing and organizing information • Negotiation 	<ul style="list-style-type: none"> • Third party report
6. Maintain professional growth and development	<ul style="list-style-type: none"> • Avenues for professional growth • Training and career opportunities • Assessing training needs • Mobilizing training resources • Licenses and certifications for professional growth and development • Pursuing personal and organizational goals • Managing work priorities and commitments • Recognizing career advancement 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence • Third party report
7. Demonstrate workplace learning	<ul style="list-style-type: none"> • Managing own learning • Mentoring • Coaching • Contributing to the learning community at the workplace • Cultural aspects of work • Networking 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence • Third party report

	<ul style="list-style-type: none"> • Variety of learning context • Application of learning • Safe use of technology • Taking initiative/proactivity • Flexibility • Identifying opportunities • Generating new ideas • Workplace innovation • Performance improvement • Managing emerging issues • Future trends and concerns in learning 	
8. Demonstrate problem solving skills	<ul style="list-style-type: none"> • Critical thinking process • Data analysis tools • Decision making • Creative thinking • Development of creative, innovative and practical solutions • Independence in identifying and solving problems • Solving problems in teams • Application of problem-solving strategies • Testing assumptions • Resolving customer concerns 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence • Third party report
9. Manage ethical performance	<ul style="list-style-type: none"> • Meaning of ethics • Ethical perspectives • Principles of ethics • Ethical standards • Organization code of ethics • Common ethical dilemmas • Organization culture • Corruption, bribery and conflict of interest • Privacy and data protection • Diversity, harassment and 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Interviewing • Portfolio of evidence • Third party report

	<p>mutual respect</p> <ul style="list-style-type: none"> • Financial responsibility/accountability • Etiquette • Personal and professional integrity • Commitment to jurisdictional laws • Emerging issues in ethics 	
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Suggested Methods of Instruction

- Demonstrations
- Simulation/Role play
- Group Discussion
- Presentations
- Assignments
- Q&A

Recommended Resources

- Computers
- Stationery
- Charts
- Video clips
- Audio tapes
- Radio sets
- TV sets
- LCD projectors

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ENVIRONMENTAL LITERACY

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

Relationship to Occupational Standards:

This unit addresses the Unit of Competency : Demonstrate Environmental Literacy

Duration of Unit: 40 hours

Unit Description

This unit describes the competencies required demonstrate environmental literacy.it involves controlling environmental hazard, controlling environmental pollution, complying with workplace 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.

Summary of Learning Outcomes

1. Control environmental hazard
2. Control environmental Pollution
3. Demonstrate sustainable resource use
4. Evaluate current practices in relation to resource usage
5. Identify Environmental legislations/conventions for environmental concerns
6. Implement specific environmental programs
7. Monitor activities on Environmental protection/Programs
8. Analyze resource use
9. Develop resource conservation plans

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Control environmental hazard	<ul style="list-style-type: none">• Purposes and content of Environmental Management and Coordination Act 1999• Storage methods for environmentally hazardous materials• Disposal methods of hazardous	<ul style="list-style-type: none">• Written questions• Oral questions

	<p>wastes</p> <ul style="list-style-type: none"> • Types and uses of PPE in line with environmental regulations • Occupational Safety and Health Standards (OSHS) 	
2. Control environmental Pollution control	<ul style="list-style-type: none"> • Types of pollution • Environmental pollution control measures • Types of solid wastes • Procedures for solid waste management • Different types of noise pollution • Methods for minimizing noise pollution 	<ul style="list-style-type: none"> • Written questions • Oral questions • Role play
3. Demonstrate sustainable resource use	<ul style="list-style-type: none"> • Types of resources • Techniques in measuring current usage of resources • Calculating current usage of resources • Methods for minimizing wastage • Waste management procedures • Principles of 3Rs (Reduce, Reuse, Recycle) • Methods for economizing or reducing resource consumption 	<ul style="list-style-type: none"> • Written questions • Oral questions • Role play
4. Evaluate current practices in relation to resource usage	<ul style="list-style-type: none"> • Collection of information on environmental and resource efficiency systems and procedures, • Measurement and recording of current resource usage • Analysis and recording of current purchasing strategies. • Analysis of current work processes to access information and data • Identification of areas for improvement 	<ul style="list-style-type: none"> • Written questions • Oral questions • Role play

<p>5. Identify Environmental legislations/conventions for environmental concerns</p>	<ul style="list-style-type: none"> • Environmental issues/concerns • Environmental legislations /conventions and local ordinances • Industrial standard /environmental practices • International Environmental Protocols (Montreal, Kyoto) • Features of an environmental strategy 	<ul style="list-style-type: none"> • Written questions • Oral questions
<p>6. Implement specific environmental programs</p>	<ul style="list-style-type: none"> • Community needs and expectations • Resource availability • 5s of good housekeeping • Identification of programs/Activities • Setting of individual roles /responsibilities • Resolving problems /constraints encountered • Consultation with stakeholders 	<ul style="list-style-type: none"> • Written questions • Oral questions • Role play
<p>7. Monitor activities on Environmental protection/Programs</p>	<ul style="list-style-type: none"> • Periodic monitoring and Evaluation of activities • Gathering feedback from stakeholders • Analyzing data gathered • Documentation of recommendations and submission • Setting of management support systems to sustain and enhance the program • Monitoring and reporting of environmental incidents to concerned /proper authorities 	<ul style="list-style-type: none"> • Oral questions • Written tests • Practical test
<p>8. Analyze resource use</p>	<ul style="list-style-type: none"> • Identification of resource consuming processes • Determination of quantity and nature of resource consumed • Analysis of resource flow through 	<ul style="list-style-type: none"> • Written tests • Oral questions • Practical test

	<p>different parts of the process.</p> <ul style="list-style-type: none"> • Classification of wastes for possible source of resources. 	
9. Develop resource Conservation plans	<ul style="list-style-type: none"> • Determination of efficiency of use/conversion of resources • Causes of low efficiency of use of resources • Plans for increasing the efficiency of resource use 	<ul style="list-style-type: none"> • Written tests • Oral questions • Practical test

Suggested Methods of Instruction

- Instructor led facilitation of theory
- Practical demonstration of tasks by trainer
- Practice by trainees
- Observations and comments and corrections by trainers

Recommended Resources

- Standard operating and/or other workplace procedures manuals
- Specific job procedures manuals
- Environmental Management and Coordination Act 1999
- Machine/equipment manufacturer's specifications and instructions
- Personal Protective Equipment (PPE)
- ISO standards
- Company environmental management systems (EMS)
- Montreal Protocol
- Kyoto Protocol

OCCUPATIONAL SAFETY AND HEALTH PRACTICES

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

Relationship to Occupational Standards

This unit addresses the unit of competency: Demonstrate Occupational Safety and Health Practices

Duration of Unit: 40 hours

Unit Description

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

Summary of Learning Outcomes

1. Identify workplace hazards and risk
2. Control OSH hazards
3. Implement OSH programs

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Identify workplace hazards and risks	<ul style="list-style-type: none">• Identification of hazards in the workplace and/or the indicators of their presence• Evaluation and/or work environment measurements of OSH hazards/risk existing in the workplace• Gathering of OSH issues and/or concerns	<ul style="list-style-type: none">• Oral questions• Written tests• Portfolio of evidence• Third party report
2. Control OSH hazards	<ul style="list-style-type: none">• Prevention and control measures e.g. use of PPE• Risk assessment• Contingency measures	<ul style="list-style-type: none">• Oral questions• Written tests• Portfolio of evidence• Third party

		report
3. Implement OSH programs	<ul style="list-style-type: none"> • Company OSH program, evaluation and review • Implementation of OSH programs • Training of team members and advice on OSH standards and procedures • Implementation of procedures for maintaining OSH-related records 	<ul style="list-style-type: none"> • Oral questions • Written tests • Portfolio of evidence • Third party report

Suggested Methods of instruction

- Assignments
- Discussion
- Q&A
- Role play
- Viewing of related videos

Recommended Resources

- Standard operating and/or other workplace procedures manuals
- Specific job procedures manuals
- Machine/equipment manufacturer's specifications and instructions
- Personal Protective Equipment (PPE) e.g.
 - Mask
 - Face mask/shield
 - Safety boots
 - Safety harness
 - 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

COMMON UNITS OF LEARNING

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APPLY AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply agricultural extension and rural sociology

Duration of Unit: 180 hours

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.

Summary of Learning Outcomes

1. Demonstrate understanding of paradigm extension
2. Demonstrate understanding of government procedures
3. Demonstrate understanding of rural sociology
4. Demonstrate understanding of farmers training and visits

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Demonstrate understanding of paradigm extension	<ul style="list-style-type: none">• Paradigm approaches• Technology transfer• Advisory service• Human resource development• Facilitation for empowerment	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Demonstrate understanding of government procedures	<ul style="list-style-type: none">• Policy formulation process• Procurement procedures• Data collection• Data analysis	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
3. Demonstrate understanding of rural sociology	<ul style="list-style-type: none">• Definition of terms• Culture• Norms• Beliefs• Farming and leadership	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report

	<ul style="list-style-type: none"> • Conflict resolution • Community resource management • Group dynamics 	
4. Demonstrate understanding of farmers training and visits	<ul style="list-style-type: none"> • Training methods • Monitoring • evaluation 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report

Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Text books
- Note books
- Flip charts
- Projector
- Computers
- Manuals
- White boards
- White board markers
- Masking tapes
- Felt pens

CORE UNITS OF LEARNING

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PRODUCE CONVECTIONAL AND NON-CONVECTIONAL LIVESTOCK

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Produce convectional and non-convectional livestock.

Duration of Unit: 180 hours

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.

Summary of Learning Outcomes

1. Select breeding stock
2. Design and construct farm structures
3. Install and maintain livestock tools, equipment and machines
4. Breed farm animals
5. Practice livestock husbandry
6. Manage young and growing stocks

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Select breeding stock	<ul style="list-style-type: none">• Livestock breeds• Animal reproduction• Breeding methods• Basic genetics• Traits of economic importance• Selection methods• Tools and equipment of breeding	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Design and construct farm structures	<ul style="list-style-type: none">• Types of animal structures• Livestock housing plans• Animal structure designs	<ul style="list-style-type: none">• Written tests• Observation• Oral questions

	<ul style="list-style-type: none"> • Construction of animal structures • Materials, Tools and equipment of construction 	<ul style="list-style-type: none"> • Third party report
3. Install and maintain livestock tools, equipment and machines	<ul style="list-style-type: none"> • Livestock tools, equipment, machines and their uses • Maintenance of livestock tools, machines and equipment 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
4. Breed farm animals	<ul style="list-style-type: none"> • Mating systems • Feeding for breeding • Artificial insemination • Embryo transfer technology • Grading up program 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
5. Practice livestock husbandry	<ul style="list-style-type: none"> • Livestock routine management practices • Bio-security measures • Personal protective equipment 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
6. Manage young and growing stocks	<ul style="list-style-type: none"> • Preparation for parturition or birth • Post-parturition management • Feeding young and growing stock • Weaning of young stock • Health management 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report

Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Convectional and non-convectional livestock breeds
- Animal breeder's manual
- Artificial insemination equipment
- Liquid nitrogen can

- Hoof trimming knives
- Burdizzo
- Wool shear
- Panga
- Ear tagging machines
- Hammer
- Tattooing machines
- Trocar and canula
- Teeth clipping knife
- Pig restraining equipment
- Feeding troughs
- Disbudding iron
- Dehorning wire
- Waterers
- Clinical thermometers
- Milking pails
- Sieve
- PPEs
- Ropes
- Farrowing crates
- Drenching guns
- De-wormers
- Bolus gun
- Ear tags
- Chaff cutter
- Electric power
- Calf pens
- Zero-grazing unit
- Cattle crush
- Pig stay
- Bee hives
- Rabbit hitches
- Deep litter houses
- Battery cage
- Egg incubators
- Livestock feed barns
- Chick brooders

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- Hack saw
- Spray race
- Knapsack sprayer
- Weigh bridge
- Weighing tape
- Weighing balance
- Stethoscope
- Branding iron
- Milking machines
- Store
- Text books
- Note books
- Flip charts
- Projector
- Computers
- Manuals
- White boards
- White board markers
- Masking tapes
- Felt pens

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MANAGE SOIL AND WATER RESOURCES

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: manage soil and water resources

Duration of Unit: 170 hours

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.

Summary of Learning Outcomes

1. Assess area topography
2. Conserve soil fertility
3. Conserve farm water
4. Design soil and water conservation structures
5. Lay out soil and water structures
6. Carry out farm irrigation
7. Carry out farm water drainage
8. Harvest farm water
9. Manage waste water disposal
10. Manage water supply
11. Prepare soil and water resources management report

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Assess area topography	<ul style="list-style-type: none">• Area topography• Area topography mapping• Assessment methods• Land survey• Land use systems• Agro-ecological zones	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Conserve soil fertility	<ul style="list-style-type: none">• Basic soil science• Soil nutrition	<ul style="list-style-type: none">• Written tests• Observation

	<ul style="list-style-type: none"> • Soil fertility management and improvement • Fertilizer requirements • Soil conservation systems 	<ul style="list-style-type: none"> • Oral questions • Third party report
3. Conserve farm water	<ul style="list-style-type: none"> • Sources of farm water • Water harvesting methods • Water conservation systems` • Water conservation method 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
4. Design soil and water conservation structures	<ul style="list-style-type: none"> • Soil and water conservation designs • Soil and water conservation structures • 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
5. Lay out soil and water structures	<ul style="list-style-type: none"> • Soil and water conservation designs • Layout / construction of soil and water conservation structures • Maintenance of soil and water conservation structures 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
6. Carry out farm irrigation	<ul style="list-style-type: none"> • Irrigation • Irrigation methods • Installation of irrigation systems • Irrigation water requirements • 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
7. Carry out farm water drainage	<ul style="list-style-type: none"> • Water drainage • Farm water drainage systems • Types of drainage systems • Maintenance of drainage systems • Tools and equipment • Operational standards 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
8. Harvest farm water	<ul style="list-style-type: none"> • Roof catchment • Surface runoff • Ground water • Rock catchment 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
9. Manage waste water disposal	<ul style="list-style-type: none"> • Waste water treatment • Waste water recycling • Waste water disposal 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions

	<ul style="list-style-type: none"> • Water pollution management 	<ul style="list-style-type: none"> • Third party report
10. Manage water supply	<ul style="list-style-type: none"> • Water supply equipment • Water supply surveys • Water supply system layout • Water supply system operation and maintenance 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
11. Prepare soil and water resources management report	<ul style="list-style-type: none"> • Collection of data • Data analysis • Documentation • Report writing 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report

Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Topography mapping tools
- Binoculars
- Quick set
- Ranging rodes
- Measuring tape
- Note books
- Levelling boards
- Shovels
- Jembes
- Mattock
- Pangas
- Water tanks
- Gutters
- Rope
- Soil auger

- Soil sample packaging bags
- Soil science laboratory and equipment
- Drip irrigation kit
- Water pipes
- Text books
- Note books
- Flip charts
- Projector
- Computers
- Manuals
- White boards
- White board markers
- Masking tapes
- Felt pens

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PRODUCE AND FORMULATE LIVESTOCK FEEDS

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Produce and formulate livestock feeds

Duration of Unit: 180 hours

Unit Description

This unit specifies competencies required to produce and formulate livestock feeds. It involves determining 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.

Summary of Learning Outcomes

1. Determine animal nutrition requirements
2. Calculate/compute/ formulate Livestock feed ration,
3. Produce or Procure animal feed and feedstuffs
4. Process animal feedstuff
5. Animal feedstuffs mixing
6. Package animal feed
7. Store animal feed

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Determine animal nutrition requirements	<ul style="list-style-type: none"> • Animal nutrition • Definition of terms • Nutrients requirement • Nutritional elements • Feed values • Animal feed intake • Recipes / formula • Rations 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report •
2. Calculate/compute/ formulate Livestock feed ration,	<ul style="list-style-type: none"> • Feed formulation methods • Animal feed rations • Weighing methods • Feed formulation formulas / 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report

	<ul style="list-style-type: none"> recipes • Animal feed analysis • 	
3. Produce or Procure animal feed and feedstuffs	<ul style="list-style-type: none"> • Land preparation • Livestock feeds and feedstuffs • Types feedstuffs • Sources of livestock feeds • Type of pasture species and their nutritive values • Pasture establishment and management • Harvesting • Range management • Conservation of feedstuffs 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report •
4. Process animal feedstuff	<ul style="list-style-type: none"> • Types of animal feed processing • Hay making • Silage making • Animal feed supplements and additives • Livestock feed mixing equipment • Animal feed mixing technologies • Blending • Types of packaging materials • Product standardization requirements (KEBS) • Branding • Animal feed storage methods • Animal feed storage structures • Storage safety standards 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report •

Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction

- Simulation
- On job training

Recommended Resources

- Animal feed ingredients
- Feedstuff
- Pangas
- Jembes slashers
- Tractor
- Seeds
- Cuttings
- Splits
- Vines
- Stolon
- Rhizoms
- Legumes
- Animal feed mills
- Animal feed mixers
- Shovels
- Hay balers
- Hay boxes
- Silage bags and other silos
- Gunny bags
- Animal feed Store
- Gumboots
- Overall
- Face masks
- Caps
- Gloves
- Text books
- Note books
- Flip charts
- Projector
- Computers
- Manuals
- White boards
- White board markers

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- Masking tapes
- Felt pens

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FARM PRODUCTS PROCESSING

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: process farm products

Duration of Unit: 210 hours

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.

Summary of Learning Outcomes

1. Identify products for value addition
2. Determine technology/machines and equipment to use
3. Process products to flour and flour products
4. Process vegetables into juice and vegetable products
5. Process fruit into juice, wine and products
6. Process Herbal products
7. Process animal products (milk, pork, beef, chicken, fish, rabbit and bee products)
8. Package processed products

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Identify products for value addition	<ul style="list-style-type: none">• Types of value addition products• Perishability• Harvest timing• Preservation methods• Packaging methods• Transportation methods• Customer preference• Nutritional / medicinal value	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Determine	<ul style="list-style-type: none">• Choice of equipment and machinery	<ul style="list-style-type: none">• Written tests

technology/machines and equipment to use	<ul style="list-style-type: none"> • Type of technology • Equipment and machinery maintenance 	<ul style="list-style-type: none"> • Observation • Oral questions • Third party report •
3. Process products to flour and flour products	<ul style="list-style-type: none"> • Types of milling technologies • Flour products • Packaging of flour and flour products • Occupation safety standards 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
4. Process vegetables into juice and vegetable products	<ul style="list-style-type: none"> • Types of vegetables for value addition • Types of technologies used in vegetable processing • Packaging of processed vegetable products • Occupation safety standards • Standardization requirement 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report •
5. Process fruit into juice, wine and products	<ul style="list-style-type: none"> • Types of fruits for value addition • Types of technologies used in fruits processing • Packaging of processed fruits products • Occupation safety standards • Standardization requirement 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report •
6. Process Herbal products	<ul style="list-style-type: none"> • Types of herbs for value addition • Types of technologies used in herbs processing • Packaging of processed herbs products • Occupation safety standards 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
7. Process animal products (milk, pork, beef, chicken, fish, rabbit, bee products hide and skins, wool)	<ul style="list-style-type: none"> • Types of animal for value addition • Types of technologies used in animal product processing • Packaging of processed animal products • Occupation safety standards 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
8. Package processed products	<ul style="list-style-type: none"> • Types of packaging materials • Labeling, branding and trade marks • Storage 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions

	<ul style="list-style-type: none"> • Transportation • Marketing 	<ul style="list-style-type: none"> • Third party report
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Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Mills
- Cereals
- Milk
- Hides and skins
- Meat
- Fruits and vegetables
- Knives
- Trays
- Solar driers
- Buckets
- Clean water
- Dust coats
- Gloves
- Juicers
- Blenders
- Sieves
- Mixers
- Flip charts
- Text Books and manuals
- Note books
- Felt pens
- Masking tapes
- Deep freezer

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- Cultures
- Thermometers
- Electricity
- Tannery chemicals
- Tannery equipment
- Clip board
- White boards
- Projectors
- Computers

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CROP PROTECTION

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: protect crops

Duration of Unit: 220

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

Summary of Learning Outcomes

1. Carry out disease and pest surveillance
2. Identify method of pest and disease control
3. Procure, transport and store farm pesticides
4. Control crop/pest diseases
5. Dispose expired chemical and empty containers
6. Prepare crop protection report

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Carry out disease and pest surveillance	<ul style="list-style-type: none">• Types of crop pests and diseases• surveillance and mapping• Documentation process	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Identify method of pest and disease control	<ul style="list-style-type: none">• Pests and disease control methods• Chemical• Biological• Cultural• Physical• IPM• ITK	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report•

3. Procure, transport and store farm pesticides	<ul style="list-style-type: none"> • Safe use of pesticides • Handling of pesticides • Packaging of pesticides • Transportation of pesticides • Storage of pesticides • Occupation safety standards • First Aid skills 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
4. Control crop/pest and diseases	<ul style="list-style-type: none"> • Types of spraying equipment • Calibration of control equipment • Spray chemical formulation • Spraying techniques • Use of PPE • Occupational safety standards • First Aid skills 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report •
5. Dispose expired chemical and empty containers	<ul style="list-style-type: none"> • Types of chemical packaging materials • Disposal methods • Environmental management and regulations • Occupational safety standards • First Aid skills 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report •
6. Prepare crop protection report	<ul style="list-style-type: none"> • Data collection • Data analysis • Report writing 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report

Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Diseases and pest identification charts
- Pictograms

- Mapping tools
- Drums
- Chemicals
- Water
- PPEs
- Insect traps
- Spray pumps
- First kits
- Text books
- Note books and manuals
- Flip charts
- Felt pens
- Clip board
- White boards
- Projectors
- Computers

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HORTICULTURAL CROPS PRODUCTION

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: produce horticultural crops

Duration of Unit:200 hours

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 horticulture post-harvesting management

Summary of Learning Outcomes

1. Determine horticultural crops to produce
2. Select/procure horticultural crop planting material
3. Manage horticultural crop nursery
4. Manage horticulture green houses
5. Manage drip irrigation system
6. Manage horticultural field
7. Horticulture post-harvest management

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Determine horticultural crops to produce	<ul style="list-style-type: none">• Types of horticultural crops• Principles of horticultural crops production• Good agricultural practices	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Select/Procure Horticultural crop planting material	<ul style="list-style-type: none">• Types of propagation materials• Propagation methods• Nursery establishment and management	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
3. Manage Horticultural crop nursery	<ul style="list-style-type: none">• Nursery cultural practices• Crop water requirements	<ul style="list-style-type: none">• Written tests• Observation

	<ul style="list-style-type: none"> • Good agricultural practices 	<ul style="list-style-type: none"> • Oral questions • Third party report
4. Manage Horticulture Green Houses	<ul style="list-style-type: none"> • Greenhouse installation • Types of media and preparation • Seedbed layout • Crop establishment • Pest and disease control • Watering techniques • PPE 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
5. Manage drip irrigation system	<ul style="list-style-type: none"> • Installation • Operation and maintenance 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
6. Manage Horticultural field	<ul style="list-style-type: none"> • Crop rotation program • Land preparation • Soil fertility management • Pest and disease control • Harvesting • Safe use of pesticides • Security measures 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report
7. Horticulture post-harvest management	<ul style="list-style-type: none"> • Post-harvest handling • Packaging • Processing • Transportation • Packhouse operations • Storage • Marketing 	<ul style="list-style-type: none"> • Observation • Written tests • Oral questions • Third party report

Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Land
- Propagation materials
- Pangas
- Fork jembe
- Rakes
- Shovel
- Pruning knives
- Watering can
- Water
- Horse pipe
- Drip lines
- Water tank
- Nursery trays
- Pumps
- Chemicals
- PPEs
- Green house kit
- Harvesting crates
- Harvesting knives
- Harvesting pails and baskets
- Packaging materials
- Shade nets
- Soil containers/ poly tubes
- Soil sterilizers
- Soil sampling tools
- Media
- Text books and manuals
- Note books
- Clip board
- White boards
- Projectors
- Computers
- Tractors
- Tractor mounted
 - ploughs
 - planters

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- sprayers
- harrows
- trailer
- Wheel burrow

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MANAGE FARM

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

Relationship to Occupational Standards

This unit addresses the Unit of Competency: manage agricultural and livestock farm

Duration of Unit: 150 hours

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.

Summary of Learning Outcomes

1. Prepare Farm Strategic Plan
2. Manage Farm Human Resources
3. Manage Farm finances

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Prepare Farm Strategic Plan	<ul style="list-style-type: none">• Strategic planning• Meaning• Importance• Tools of planning• Planning process• Farm business plan	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
2. Manage Farm Human Resources	<ul style="list-style-type: none">• Human resources management• Meaning• Importance• Performance contracting• Monitoring and evaluation• Staff recruitment• Conflict resolution	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report
3. Manage Farm finances	<ul style="list-style-type: none">• Farm accounts• sources of finance• financial accounts• balance sheets• Farm records	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report

	<ul style="list-style-type: none"> • Sales records • Purchase records • Production records • Financial documents • Journals • Receipts • Voucher • Master roll • Staff registers • Ledger books 	
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Suggested Methods of instruction

- Project
- Demonstration by trainer
- Practice by the trainee
- Discussions
- Direct instruction
- Simulation
- On job training

Recommended Resources

- Flip charts
- Note books
- Ruler
- Text books and manual
- Projectors
- Computers

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