



African Network for  
Agriculture, Agroforestry  
& Natural Resources Education

# Agribusiness Curriculum Framework

**CERTIFICATE AND DIPLOMA**

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# Preface

The African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE) has evolved to become the lead organization in championing curriculum review and development for Tertiary Agricultural Education (TAE) in sub-Saharan Africa. ANAFE has developed methodology called DACUM or “Developing A Curriculum” (Temu and Kasolo, 2003) specifically to handle curriculum review. Founded in 1993 by 29 institutions and with a mandate to develop stand-alone agroforestry curricula for all degree levels, ANAFE has supported more than 60 universities and colleges to review and develop Agroforestry curricula, which are still in use within those institutions. ANAFE has also supported the training of lecturers in agroforestry, establishing agroforestry demonstration plots, developing learning materials, supporting students with research grants and supporting staff exchange programs where experienced staff support their peers in delivering agroforestry courses in different institutions.

Twenty years down the line, ANAFE membership, which has grown to over 130 institutions by 2014, continues to receive numerous requests to support development and implementation of agribusiness curricula with a view to produce experts who can adequately manage current opportunities and challenges in agribusiness. Due to its critical role in socio-economic development, agribusiness has generated a lot of interest in academic and business circles. Hence, agribusiness curriculum development is a strong component of two programs that ANAFE has been jointly implementing with partners. These are the DANIDA supported UniBRAIN (Linking Universities, Business and Research in Agribusiness Innovations) program and the Sida supported Strengthening Africa’s Strategic Agricultural Capacity for Impact on Development (SASACID).

The curriculum development process was comprehensive and inclusive. It started with a survey of ANAFE member institutions to know what they were offering as agribusiness programs. The results show that it is mainly Economics Departments that offer Business Management programs thus losing out on entrepreneurial components. This realization prompted ANAFE to develop comprehensive agribusiness curricula for Certificate, Diploma, BSc, MSc and PhD degree levels.

The DACUM methodology allowed for a very participatory and inclusive process that took about two years (2012–2014) and involved over 200 stakeholders from colleges, universities, research institutions and the private sector. Students, lecturers, deans and principals from universities and colleges from Kenya, Benin, Ghana, Uganda, Zambia, Senegal, Niger, Botswana, Zimbabwe, Nigeria, Burkina Faso, and South Africa made a special contribution to the development of these curricula. Special support in reviewing the curricula was received from SupAgro University (France) and Cornell University (USA).

This document, therefore, serves as a curriculum guide for colleges and universities wishing to establish a certificate/diploma or degree program in agribusiness. They could use it or take inspiration from it. Feedback from its implementation is useful in identifying areas that require refining in line with emerging trends hence institutions implementing the curricula are advised to be in touch with ANAFE to capture this feedback.

Aissetou Drame Yaye  
Executive Secretary of ANAFE

# Acknowledgements

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The UniBRAIN consortia have been very supportive and have contributed a lot to the development of the curricula. The consortia we thank sincerely are the Sorghum Value Chain Development Consortium (Kenya), the Afri-Banana Products Limited Consortium (Uganda), the CURAD Consortium (Uganda), the Agribusiness Incubation Trust (Zambia) and the CCLEAR Consortium (Ghana).

The two key private sector partners that contributed a lot and that we also thank are the Pan African Agribusiness Consortium (PanAAC) led by Mrs Lucy Muchoki and the Kenya Market Trust represented by Ms Anushka Boodhna and Mr Patrick Oyoo.

We owe special thanks to Rongo University College for organizing the launch of the full curricula. In this regard, we are sincerely grateful to the Rongo University College leadership, particularly the Principal, Prof. Samuel Gudu, the Dean of the School of Agriculture and Natural Resources Education, Prof. Peter Kisinyo, the Dean of the School of Sciences Prof. Valerie Palapala and Prof. Daniel Nyamai who facilitated the linkage between ANAFE and Rongo University College. Apart from Rongo University College, other institutional leaders also supported the whole process contributing not only to the development of the curricula, but also engaging their institutions in piloting implementation of the curricula at Certificate/Diploma, BSc, and MSc levels respectively. They include Prof. Christine Onyango, Deputy Principal of Taita-Taveta University College; Prof Olusegun Yerokun, Dean of the Faculty of Agriculture at Mulungushi University of Zambia; Dr George Njenga, Dean Strathmore University Business School and his team composed of Dr Hilda Mogire, Dr Simon Ndiritu and Grace Kariuki.

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We also have consultants who did a great job at one stage or another during the development of these curricula. We would like to thank Prof. Henry Bwisa from Jomo Kenyatta University of Agriculture and Technology (JKUAT) (Kenya); Prof. Claude Adandedjan from Abomey Calavi University; Ms Lucy Ngare from Kenyatta University; Prof. François Kamadjou from the University of Dschang, Prof. Amballi Yacouba from Université Abdou Moumouni of Niger, and Prof. Patrick Malope from Botswana College of Agriculture (BCA).

We are grateful to the group of external reviewers who assessed and helped us improve the final versions of the curricula. These are: Prof. Fatiha Fort from SupAgro (France), Dr Linley Karlton and Murat Sartas from SLU (Sweden), Prof. Ralph Dean Christy, Dr Edward Mabaya and Dr Krisztina Tihanyi from Cornell University (USA).

The ANAFE Secretariat Team involved composed of Dr Sebastian Chakeredza (Deputy Executive Secretary), James Aucha (Program Officer) and Alfred Ochola (Communication Officer) and this team deserves special congratulations for their hard work.

I thank all ANAFE partners and friends for their continued support.

Aissetou Drame Yaye  
Executive Secretary of ANAFE



# CERTIFICATE COURSES

## **Career Prospects**

This level should produce a basic agribusiness entrepreneur (agripreneur) capable of starting a micro-enterprise and/or becoming a practical agribusiness advisor with primary production and basic value-addition expertise. A certificate holder should effectively be able to work as an assistant to a first-level manager, sometimes called a lower-level manager, who is at the bottom of the managerial hierarchy. In an ideal situation, the certificate holder is a direct implementer of policies of an agribusiness organization.

## **Entry Requirements**

The entry requirements for this program will vary from country to country. For admission to the program in Kenyan institutions, one must have a minimum of KCSE mean grade D+ (Plus) or its equivalent with C- in Biology; Agriculture and English, D+ in Mathematics and Physical Science/Chemistry.

## **Course Duration**

The program is designed to last three taught semesters and one internship lasting eight weeks.

## **Competencies**

The certificate imparts graduates with competencies necessary to undertake tasks associated with the business planning and financial management of an agribusiness. It also imparts the skills, attitudes and knowledge required to develop and monitor business and financial plans; manage risk; manage capital; implement taxation requirements; obtain finance to establish, extend, or diversify an agribusiness; and analyse performance and investment opportunities, for an agribusiness. Specifically, the graduate should have the following competencies:

- To plan, set up and operate an agribusiness at corporate level as well as self-employment;
- To devise and apply innovative solutions to the myriad of problems facing agribusiness and allied sectors of the economy;
- To contribute to the formulation, analysis and advocacy of agribusiness sector including policies, agro-industries and value chains;

- To communicate and negotiate; and
- Pursue a Diploma in Agribusiness.

## SCHEDULE OF COURSE UNITS

### Year I: Semester 1

Name of Course Unit	Credits
1. Communication and Study Skills	3
2. Introduction to Mathematics for Business	2
3. Principles of Agribusiness Management	2
4. Introduction to Economics	3
5. Introduction to Information and Communication Technology	3
6. Introduction to Agriculture	2
7. Introduction to Critical Thinking	2
8. Planning and Decision Making in Agribusiness	2
<b>Total</b>	<b>19</b>

### Year I: Semester 2

Name of Course Unit	Credits
9. Agribusiness Environment	2
10. Principles of Crop Production	4
11. Introduction to Animal Production	4
12. Agribusiness Marketing	2
13. Creative and Innovative Business	3
14. Production Economics	3
15. Elements of Human Resource Management	2
16. Farm Management and Accounting	3
<b>Total</b>	<b>23</b>

## Year 2: Semester I

<b>Name of Course Unit</b>	<b>Credits</b>
17. Business Planning	3
18. Entrepreneurship	3
19. Customer Care	2
20. Supply Chain Management	3
21. Post-Harvest Handling of Agricultural Products	3
22. Introduction to Community Development	2
23. Introduction to Environmental Policies and Laws	3
24. Introduction to Agricultural Policies and Laws	3
25. Internship	4
<b>Total</b>	<b>26</b>

**Total Credits for Graduation: 68**

**Internship: 8 weeks after the end of second year.**

## Course Descriptions

### Year I: Semester I

<b>Course No. AG-CS 01</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Communication and Study Skills</b>

#### Purpose

To enable the learner to communicate and study effectively.

#### Learning Outcomes

By the end of the unit, the learner should be able to:

- Speak efficiently;
- Write efficiently;
- Listen efficiently;
- Do information sourcing; and
- Use both verbal and non-verbal communication strategies.

#### Content

Definition of concepts: elements, process, qualities and barriers, cultural barriers to communication, models of communication. Oral communication: public speaking, persuasion, interviews, meetings and tutorial discussions. Listening skills: efficient listening, barriers to efficient listening, empathic listening and counselling for people in distress. Reading: skimming, scanning and study reading. Writing: principles of good writing, minutes writing, letter writing. Visual communication: chalkboard, smart boards, power point, television and films. Sources of information: interviews, questionnaires, library and study skills, observation and experiments and computer-mediated communications.

#### Teaching Methods

Class lectures, group activities, class discussions, demonstrations and illustrations, class presentations.

<b>Course No. AG-CS 02</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Introduction to Mathematics for Business</b>

### **Purpose**

To equip learners with the basic mathematical techniques and principles.

### **Learning Outcomes**

By the end of this unit, the learner should be able to:

- Understand the concept of sets and algebra;
- Perform differential and integral calculus.

### **Content**

The concept of sets: set notation, relationship between sets, laws of set operations. Types of functions: linear models, matrix algebra, vectors. Calculus: differential calculus, integral calculus.

### **Teaching Methods**

Participatory lectures, group discussions, powerpoint presentations, group activities, exercises.

<b>Course No. AG-CS 03</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Principles of Agribusiness Management</b>

### **Purpose**

The course unit introduces the learners to the elements of agribusiness management.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Discuss the management principles;
- Explain the functions of management in agribusiness enterprises;
- Apply management principles in small and medium agri-enterprises; and
- Explain modern management approaches in agribusiness.

## Content

Meaning and importance of management; principles and functions of management; qualities of a good manager; planning and decision making, an overview of the breadth, size, scope and management aspects of the agricultural business; legal forms of business; the role and organization of agribusiness; application of best management practices.

## Teaching Methods

Lectures, guest speakers, group work, and visits to enterprises.

<b>Course No. AG-CS 04</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Economics</b>

## Purpose

To introduce the agribusiness student to the economic analysis of a business.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Display a good command of the basic vocabulary used in economics;
- Apply economic principles in resource allocation, production, cost analysis; and
- Describe market price equilibrium in the agribusiness.

## Content

Definition and scope of economics; basic economic concepts: needs, wants, scarcity, choice, opportunity cost and comparative advantage; types of economic organizations; basic economic questions; factors of production; economic goals for society; price system; supply and demand including their determinants; equilibrium price; market structures: pure competition, pure monopoly, monopolistic competition, oligopoly; national income and national product; savings, consumption, and investment; equilibrium national income; employment, money, inflation, exchange rates; fiscal policy; monetary policy; balance of payments and the role of agriculture in the Kenyan economy.

## Teaching Methods

Lectures, group discussions and field visits.

<b>Course No. AG-CS 05</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Information and Communication Technology</b>

## **Purpose**

This course unit will help learners to apply basic computer applications in agribusiness.

## **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Display reasonable command of basic vocabulary used in ICT;
- Apply basic computer skills and knowledge in data management, source for information on input-output markets and communicate with stakeholders;
- Appropriately store and retrieve data files as well as editing them; and
- Design and implement databases relevant to agribusinesses.

## **Content**

Fundamentals and classification of computers: information and data, bit and byte, analog and digital; hardware: input devices, output devices, storage devices, and Central Processing Unit (CPU) and control devices; software: system software, operating systems, compiling systems, and utilities; data files: random and sequential; disk storage: track, sector, cluster and face; errors generated by computers; introduction to software packages: word processing, spreadsheets and database management; database management system: creating a database structure, entering and amending data, retrieval and manipulation of data, report production, database administration and security; project.

## **Teaching Methods**

Lectures and tutorials, practicals, assignments, and presentations.

<b>Course No. AG-CS 06</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Introduction to Agriculture</b>

### **Purpose**

This course unit aims at providing learners with knowledge and skills on basic theories and principles affecting agricultural production.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Explain the development of agriculture in Africa;
- Describe the modern principles of agricultural production; and
- Explain factors limiting agricultural production in Africa.

### **Content**

Historical perspectives of agriculture in Africa; tropical agricultural systems; importance of agriculture to African economies; biotic and abiotic factors affecting agriculture; agricultural systems; cultural practices in agriculture; current issues on sustainable crop and animal production and management.

### **Teaching Methods**

Lectures, discussions, practicals, and field visits.

<b>Course No. AG-CS 07</b>	<b>Credits:2</b>
<b>Course Name</b>	<b>Introduction to Critical Thinking</b>

### **Purpose**

To build up in the learner the capacity to develop and support their beliefs, and evaluate the strength of arguments made by others in real-life situations.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Define critical thinking;
- Positively critique situations; and
- Make prudent decisions.

## Content

Meaning and importance of critical thinking; claims, beliefs and arguments; logic and logicity; deductive and inductive reasoning; decision making and problem solving; reason and reasoning; obstacles to critical thinking.

## Teaching Methods

Lectures, group discussions, debates, simulations, guest speakers.

<b>Course No. AG-CS 08</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Planning and Decision Making in Agribusiness</b>

## Purpose

To provide an overview of the managerial functions in agribusiness.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Advise small-holder agripreneurs to make sound agribusiness decisions; and
- Plan and implement agribusiness activities.

## Content

Meaning and the role of planning in decision making; types of plans; importance of planning; decision making in agribusiness; the planning and decision making process; factors to consider in decision making for agribusiness enterprises.

## Teaching Methods

Lectures, class discussions, group work, case studies, field visits.

## Year 1: Semester 2

<b>Course No. AG-CS 09</b>	<b>Credits:2</b>
<b>Course Name</b>	<b>Agribusiness Environment</b>

### Purpose

The course unit aims at familiarizing the learners with various aspects of economic, social, political and cultural environments.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain environmental factors influencing agribusiness enterprises;
- Describe the technological factors influencing agribusiness enterprises; and
- Enumerate government economic policies that affect agribusiness.

### Content

Concept and characteristics of business environment; an overview of various dimensions of business environment; socio-cultural, political and legal environments; economic factors; societal context of business enterprise; technological forces affecting agribusiness sectors: input suppliers, producers, processors, distributors and those at the retail end of the chain.

### Teaching Methods

Lectures and interactive discussions, guest speakers, field visits.

<b>Course No. AG-CS 10</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Principles of Crop Production</b>

### Purpose

This course unit exposes learners to the basic principles of crop production so that they can understand production practices that are not unique to but demonstrated by specific crops.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Demonstrate an understanding of the principles underlying plant nutrition; irrigation; planting patterns; plant population; and harvesting;

- Distinguish between different plant pests and diseases; and
- Carry out various agronomic and plant protection practices.

## **Content**

Land use and evaluation; local farming systems; crop ecology; land preparation; general principles of crop propagation; planting; propagation; fertilizer and manures mulching; weeds and weed control; field pests and their control; diseases of crops and their control; crop rotation; pasture and fodder establishment; crop improvement; harvesting and storage.

## **Teaching Methods**

Lectures, discussions, practicals, and field visits.

## **Suggested Practicals**

1. Tour the neighborhood to see local farming systems and land use;
2. Visit the meteorological station to collect data on rainfall and identify equipment used at the station;
3. Identification of farm tools and implements e.g. observing land preparation by a tractor or oxen;
4. Carry out manual land preparation;
5. Identification of planting tools, measurements, methods of planting, identification of fertilizers and manures, identification of planting materials;
6. Identification of mulching materials, methods of mulching and mulching activities;
7. Recognition of damage caused by pests, pest identification, collection and mounting;
8. Familiarization with pesticides and methods of their application.

<b>Course No. AG-CS II</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Introduction to Animal Production</b>

### **Purpose**

This course unit exposes learners to the basic principles of animal production so that they can understand the factors that influence the productivity of farm animals.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Acquire the necessary knowledge and skills required for profitable animal production practices;
- Produce farm animals to cater for the protein needs of the population; and
- Apply the principles for preventing and controlling pests and diseases of farm animals and improve the productivity of the farm animals.

### **Content**

Definition and introduction to the field of animal husbandry; land use in Kenya in relation to livestock production; effect of climate on livestock; livestock distribution; livestock development policy; principles of animal breeding and nutrition. Dairy and beef; sheep and goats; poultry (chicken); pig and rabbit; and beekeeping production systems and their routine management practices—breeds, feeding, housing and equipment and records; handling, processing and marketing of livestock products.

### **Teaching Methods**

Lectures, discussions, practicals, and field visits.

### **Suggested Practicals**

1. Farm visits;
2. Breeding records and selection of breeding stock;
3. Artificial insemination;
4. Feedstuff identification, rationing and mixing of feeds and a visit to a feed mill;
5. Identification of breeds and various types of farm animals;
6. Handling tools and equipment;
7. Selection, judging and culling of cattle;
8. Milking, milk hygiene and record keeping;

9. Sexing, culling and selection of birds;
10. Vaccination and general hygiene of various farm animals;
11. Dressing of broilers;
12. Handling of pigs—tooth clipping, iron injection, and moving them from one point to another;
13. Wool shearing and hoof care;
14. Hive construction, bee handling equipment and honey harvesting.

<b>Course No. AG-CS 12</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Agribusiness Marketing</b>

### **Purpose**

To provide learners with the fundamental concepts associated with the study and practice of agribusiness marketing.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Have an insight into the marketing of agribusiness products;
- Discuss the role of processing in agribusiness marketing;
- Describe methods of marketing agribusiness products;
- Address the challenges of agribusiness marketing;
- Describe the market structures in agribusiness; and
- Explain the effect of market structures in agribusiness marketing.

### **Content**

Introduction to agricultural marketing and food processing; importance of agricultural marketing and food processing in agribusiness; challenges in agribusiness marketing; principles of marketing (The Ps of marketing); market structures and their effect on agribusiness; factors affecting demand for agribusiness products; creating demand for agribusiness products.

### **Teaching Methods**

Lectures, discussions, group work, and field visits.

<b>Course No. AG-CS 13</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Creative and Innovative Business</b>

### **Purpose**

This course unit introduces the learners to the concepts of creativity and innovation as applied in business.

### **Learning Outcomes**

By the end of this unit, the learner should be able to:

- Appreciate the importance of creativity and innovation in business;
- Develop personal creativity and innovativeness; and
- Apply creativity and innovation in business.

### **Content**

Meaning and importance of creativity and innovation; creativity techniques; principles of innovation; methods of generating business innovations; creative and non-creative businesses; making innovations in business.

### **Teaching Methods**

Lectures, class discussions, field studies, practical sessions, and simulations.

<b>Course No. AG-CS 14</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Production Economics</b>

### **Purpose**

This course unit aims at providing learners with basic knowledge on economic allocation of land and other agricultural resources.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Explain the difference between production economics and farm management, agricultural economics and peasant agriculture;
- Explain the concepts of production, production function and its mathematical representations;
- Differentiate between the different types of production relationships (Factor-product, factor-factor and product-product relationships).

## Content

The scope and nature of agricultural production economics; the difference between agricultural production economics and farm management, agricultural economics and peasant agriculture. Analytical tools of production economics; theory of production, production function and the returns to scale (constant, increasing and decreasing). Algebraic forms of production function; production relationships: factor-product, factor-factor. The three stages of production and profit maximization; production relationships: product-product and profit maximization; resources in agriculture: land, capital and management resources.

## Teaching Methods

Lectures, group discussions, and assignments.

<b>Course No. AG-CS 15</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Elements of Human Resource Management</b>

## Purpose

This course unit focuses on the understanding and management of human behavior in organizations for optimal organizational effectiveness and individual outcomes.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the meaning of human resource;
- Describe the role of human resource in agribusiness enterprises;
- Explain the various methods of recruitment; and
- Discuss factors necessary for effective human resource management in agribusiness activities.

## Content

Meaning of human resource management; role of human resource in agribusiness enterprises; equal employment opportunity; methods used in job analysis; advantages of internal and external recruitment; decision strategies for employee selection; training; performance appraisal; compensation programs; implementation of incentive programs; employee benefits program; employee rights and employer responsibilities; labor laws; and the economic, political, legal and cultural factors in human resource management.

## Teaching Methods

Lectures, group discussions, case studies, and field visits.

<b>Course No. AG-CS 16</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Farm Management and Accounting</b>

## **Purpose**

This course unit introduces the learners to the principles of farm management and accounting.

## **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Display a reasonable mastery of the vocabulary used in farm management and accounting;
- Prepare farm budgets;
- Explain the reasons for keeping farm records;
- Keep the different types of farm records and prepare from them farm final accounts; and
- Use the various ratios to detect the financial health of a farm business.

## **Content**

Meaning and purpose of keeping farm records and accounts; types and sources of data necessary for keeping records; types of farm records and accounts e.g. physical and financial records; business documents, e.g. receipts, invoices and statements (cheques, invoice, receipt, purchase orders); simple books of accounts: cash, farm diary, petty cashbook, analysis book; financial statements: profit and loss account, balance sheet, etc.; depreciation and annual valuations. Meaning of farm planning and farm layout, budgeting; importance of farm planning and budgeting; factors influencing farm planning and budgeting; farming system, land tenure and agricultural credit; methods of farm planning; comparative analysis and cost accounting; budgeting; gross margin analysis, programme planning etc. Complete budget (simple format); break-even budget; enterprise analysis and performance measures; farm decision making process.

## **Suggested Practicals**

1. Data collection and analysis;
2. Simple design and use of the various types of farm records;
3. Valuation of the appreciable and depreciable farm assets;
4. Weekly livestock costs and production analysis (lactation and milk production records); and
5. Preparation and analysis of financial statements.

## Year 2: Semester I

<b>Course No. AG-CS 17</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Business Planning</b>

### Purpose

This course unit exposes the learners to the practical aspects of business plan preparation. It is, therefore, a practical session where the learners are guided on how to prepare a business plan.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Describe the different components of a business plan;
- Appreciate the need for a business plan in an enterprise; and
- Select an enterprise, prepare its business plan and make oral presentation.

### Content

Definition of a business plan, importance of a business plan for an enterprise; components of a business plan, bankable business plans.

### Teaching Methods

Lectures, assignments, group discussions, and class presentations.

<b>Course No. AG-CS 18</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Entrepreneurship</b>

### Purpose

The course unit aims at inculcating entrepreneurial behavior in the learners.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the meaning of entrepreneurship;
- Distinguish between an entrepreneur and business persons;
- Discuss the importance of entrepreneurship in agribusiness;

- Identify the Entrepreneurial Characteristics (ECs) of successful entrepreneurs; and
- Explain the role of innovation and creativity in agribusiness.

## Content

Meaning and importance of entrepreneurship; role of entrepreneurship in agri-enterprises; Entrepreneurial Characteristics (ECs); elements of successful entrepreneurship; opportunity identification and assessment; entrepreneurship and small business creation; creative and innovative approaches to agribusiness activities; process of creativity.

## Teaching Methods

Lectures, case studies, guest speakers, video recordings and practical sessions.

<b>Course No. AG-CS 19</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Customer Care</b>

## Purpose

This course unit enables the learners to effectively care for an enterprise client.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Classify different customers;
- Handle different customers; and
- Discuss the importance of agribusiness customer care.

## Content

Definition and aspects of a customer; customer attributes; customer care principles; approaches to customer care; customer care policy and skills; categories of customers; dealing with different categories of customers; importance of agribusiness customer care.

## Teaching Methods

Lectures, group work, simulations and practical interaction with real-life customers.

<b>Course No. AG-CS 20</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Supply Chain Management</b>

### **Purpose**

To introduce learners to concepts and strategies in supply chain management.

### **Learning Outcomes**

By the end of the unit, the student should be able to:

- Explain the role of supply chain management in agribusiness activities;
- Effectively execute the function of a supply chain operative; and
- Discuss the challenges in agribusiness supply chain.

### **Content**

Introduction to Supply Chain Management (SCM); meaning and importance of supply chain in agribusiness; supply chain elements; the difference between supply chain and value chain; value chain analysis; the challenges in SCM.

### **Teaching Methods**

Lectures, group discussions, and field visits.

<b>Course No. AG-CS 21</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Post-Harvest Handling of Agricultural Products</b>

### **Purpose**

This course unit enables the learners to use knowledge and skills in reducing post-harvest losses and adding value to agribusiness products.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Explain basic post-harvest handling techniques of agribusiness products within their catchment;
- Maintain and improve agribusiness products' quality; and
- Enhance food quality and reduce post-harvest losses.

## Content

Overview of post-harvest technologies in agribusiness; post-harvest handling and losses of agribusiness products; importance and advantages of post-harvest handling; cleaning, packaging, distribution and transportation.

## Teaching Methods

Participatory lectures, group discussions, power point presentations, group activity exercises, and case studies.

NB: Pre-harvest handling is a prerequisite.

<b>Course No. AG-CS 22</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Introduction to Community Development</b>

## Purpose

This course unit aims at providing learners with basic knowledge on factors affecting the transformation of societies.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the meaning of community development and the factors that influence it;
- Describe the strategies for enhancing community development; and
- Explain the policies governing development.

## Content

Community development; factors affecting community development; contribution of agriculture to community development; strategies for effective community development; indicators of community development; agricultural projects and their developmental impacts; national agricultural policies and strategies on community development.

## Teaching Methods

Lectures, discussions, community involvement, case studies, and guest speakers.

<b>Course No. AG-CS 23</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Environmental Policies and Laws</b>

### **Purpose**

This course unit introduces learners to environmental policies and laws.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Comply with the prevailing environmental laws and policies;
- Describe the prevailing environmental policies and laws;
- Advise stakeholders on prevailing environmental conservation policies and practices.

### **Content**

Meaning and functions of environmental policies and laws; importance of environmental policies and laws; enforcement of environmental laws; adaptation and mitigation of climate change; natural resource management laws and policies (e.g. land use laws, water resource laws, sustainable management of natural resources, and energy conservation acts like the Forest Act, Wildlife Act; Fisheries Act, the Public Health Act, and the Factories Act); the role of the National Environmental Management Authority (NEMA) and the Environmental Management Conservation Act.

### **Teaching Methods**

Lectures, class and group discussions, visits/practicals, case studies, and project work in agribusiness firms.

### **Methods of Evaluation**

Coursework; projects, assignments and tests.

<b>Course No. AG-CS 24</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Agricultural Policies and Laws</b>

### **Purpose**

This course unit introduces learners to agricultural policies and laws.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Describe policies and laws pertaining to agricultural enterprises;
- Advise stakeholders on matters related to agricultural and agribusiness policies and practices.

### **Content**

Basic principles of law; types of law (civil, criminal); sources of law; administration of law; law of persons; laws of tort; contract law (sale of goods, agency and partnership); introduction to company law; law of succession; and introduction to laws governing agricultural production and marketing.

### **Teaching Methods**

Lectures, class and group discussions, visits, and case studies.

### **Methods of Evaluation**

Coursework, projects, field attachment, assignments, and tests.

<b>Course No. AG-CS 25</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Internship (8 Weeks)</b>

# DIPLOMA COURSES

## Career Prospects

A diploma holder is an agripreneur like the certificate holder but capable of starting not just a micro but also a small and medium scale agribusiness and/or become an agribusiness advisor with advanced value chain expertise with more intellectual and managerial skills. In an agribusiness organization the diploma holder should be able to work as a first-line manager serving as a supervisor or retail manager, or in other capacities that involve the day-to-day business operations. The diploma holder's tasks often include: scheduling, budgeting, human resources activities and disciplinary measures.

## Entry Requirements

The entry requirements will vary from institution to institution. For Kenya, the minimum requirements are:

### (a) K.C.S.E. Candidates

Must have attained a mean grade of C- (Minus) in K.C.S.E, or equivalent, and have a minimum of C in Mathematics, Biology or Agriculture or Geography, Chemistry or Physical Sciences and in English or Kiswahili.

### (b) Other Candidates

Admission to the diploma course may also be granted to holders of a certificate in agribusiness or related disciplines from a recognized institution with a minimum of a credit in Agriculture and related subjects.

## Competencies

Based on the functions and tasks associated with these jobs, the graduates should have skills, attitudes and knowledge required to develop and monitor business and financial plans; manage risk; manage capital; implement taxation requirements; obtain finance to establish, extend, or diversify an agribusiness; and analyze performance and investment opportunities for an agribusiness. Specifically, the graduate should be able to:

- Plan, set up and operate an agribusiness at corporate level as well as self-employment;
- Devise and apply innovative solutions to the myriad of problems facing agribusiness and allied sectors of the economy;

- Contribute to the formulation, analysis and advocacy of the agribusiness sector, including policies, agro-industries and value chains;
- Communicate and negotiate effectively;
- Contribute to the setting up and the operation of a profitable agribusiness incubation project;
- Create new ventures in agribusiness; and
- Pursue further training in agribusiness.

## COURSE SCHEDULE

### Year I: Semester I

Course Unit Name	Credits
1. Mathematics for Agribusiness	2
2. Introduction to Agriculture	3
3. Agripreneurship Behavior	3
4. Computer Applications in Agribusiness	4
5. Fundamentals of Crop Science	3
6. Communication and Negotiation Skills	3
7. Soil Science	3
<b>Total</b>	<b>21</b>

### Year I: Semester 2

Course Unit Name	Credits
8. Introduction to Animal Production	4
9. Leadership in Agribusiness	3
10. Information Systems in Agribusiness	3
11. Gender in Agribusiness	3
12. Statistics for Agribusiness	3
13. Annual Crops	3
<b>Total</b>	<b>19</b>

## Year 2: Semester 1

Course Unit Name	Credits
14. Agribusiness Marketing	3
15. Introduction to Supply Chain Management	3
16. Critical Thinking and Logic	3
17. Fundamentals of Food Science and Technology	3
18. Agricultural Production Systems	3
19. Creativity and Innovation for Agripreneurship	3
20. Perennial Crops	3
<b>Total</b>	<b>21</b>

## Year 2: Semester 2

Course Unit Name	Credits
21. Post-Harvest Technology	3
22. Agribusiness Small Enterprise Management	3
23. Procurement and Logistics Management	3
24. Principles of Agricultural Extension	3
25. Agricultural and Agribusiness Policies and Laws	2
26. Human Resource Management	3
27. Non-Ruminant Production Systems	4
28. Internship (8 Weeks)	4
<b>Total</b>	<b>25</b>

### Year 3: Semester I

Course Unit Name	Credits
29. Food Processing and Preservation	3
30. Developing Business Models	3
31. Agribusiness Strategic Management	3
32. Rural Sociology	3
33. Introduction to Research Methods	2
34. Agribusiness Project Management	3
35. Ruminant Production Systems	3
<b>Total</b>	<b>20</b>

### Year 3: Semester 2

Course Unit Name	Credits
36. Agribusiness and Social Entrepreneurship	3
37. International Trade in Agribusiness	3
38. Environmental Policies and Laws	2
39. Business Psychology	3
40. Agricultural Development	3
41. Land, Forest and Water Resource Management	3
42. Introduction to Horticulture	3
43. Internship (8 Weeks)	4
<b>Total</b>	<b>24</b>

**Internships:** Two internships lasting eight weeks each (at the end of the second and third years).

**Course Evaluation:** Continuous Assessment Tests and End of Semester Examinations.

## Year I: Semester I

<b>Course No. AG-DS 01</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Mathematics for Agribusiness</b>

### Purpose

To equip learners with general mathematical techniques.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Perform differential and integral calculus; and
- Perform function optimization.

### Content

The concept of sets: set notation, relationship between sets, laws of set operations; types of functions: linear models, matrix algebra, vectors; calculus: differential calculus, integral calculus; and classical optimization.

### Teaching Methods

Participatory lectures, group discussions, power point presentations, group activities, and exercises.

<b>Course No. AG-DS 02</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Agriculture</b>

### Purpose

To equip the learners with the relevant basic concepts for agricultural production.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Describe the history of agriculture and its development;
- Discuss agricultural systems and how they affect the environment; and
- Explain factors affecting agricultural production and their management.

## Content

Historical perspectives of agriculture; tropical agricultural systems; the importance of agriculture in an economy; the role of science and technology in agricultural development; climatic regimes and their effects on the environment; the impact of agricultural practices on the environment; cropping systems; and ecological factors influencing crop and livestock production.

## Teaching Methods

Lectures, group work and presentations, field work, field trips, and case studies.

<b>Course No. AG-DS 03</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agripreneurship Behavior</b>

## Purpose

This course unit introduces the concept of Agripreneurship and differentiates it from entrepreneurship.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Define agripreneurship and entrepreneurship;
- Identify success factors in agripreneurship;
- Distinguish between agripreneurial and entrepreneurial behaviors; and
- Practise creativity and innovativeness in agribusiness.

## Content

Definition of entrepreneur (ship) and agripreneur (ship); personal characteristics of agripreneurs and entrepreneurs; creativity and innovativeness in agribusiness; agripreneurship success factors; role models in agribusiness and their success stories.

## Teaching Methods

Lectures, field visits, and case studies.

<b>Course No. AG-DS 04</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Computer Applications in Agribusiness</b>

### **Purpose**

To introduce the learners to basic computer applications in agribusiness.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Define the basic input and output devices of a computer;
- Appropriately store and retrieve data files as well as edit them; and
- Design and implement databases relevant to agribusiness.

### **Content**

Fundamentals and classification of computers; information and data; bit and byte; analog and digital; hardware: input devices, output devices, storage devices, the Central Processing Unit (CPU), and control devices; software: system software, operating systems, compiling systems and utilities; data files: random and sequential; disk storage: track, sector, cluster and face; errors generated by computers; introduction to software packages: word processing, spreadsheets and database management; database management system: creating a database structure, entering and amending data, retrieval and manipulation of data, report production, database administration and security; project.

### **Teaching Methods**

Lectures and tutorials, practicals, assignments, and presentations.

<b>Course No. AG-DS 05</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Fundamentals of Crop Science</b>

### **Purpose**

The course unit aims to provide an overview of the basic concepts in crop science.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Describe the growth and development of crops;

- Describe factors affecting plant growth and crop production; and
- Explain agronomic practices in crop production.

### **Content**

Definition, anatomy, growth habits, factors affecting growth, and pests of major crop plants of the tropics; plant form and function; crop life cycle; specific crops; advances in crop production; plant protection; and agronomic practices.

### **Teaching Methods**

Lectures, laboratory practicals, fieldwork, and discussions.

<b>Course No. AG-DS 06</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Communication and Negotiation Skills</b>

### **Purpose**

To build the learners’ communication and negotiation skills, and the ability to handle objections effectively.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Communicate appropriately in response to clients’ needs; and
- Negotiate and handle objections of clients effectively.

### **Content**

Communication skills: the communication process, barriers to open and close communication, appropriate responses to ensure open communication, handling objections and appropriate responses at the workplace, and presentations following the persuasive selling format framework. Negotiation skills: principles behind effective negotiation and the tools necessary to achieve a win-win situation with the customer when negotiating, and the seven (7) key steps in successful negotiations.

### **Teaching Methods**

Lectures, presentations, debates and role plays, class discussions, interviews, and speech contests.

<b>Course No. AG-DS 07</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Soil Science</b>

## **Purpose**

This course unit introduces learners to the basic concepts used in soil science and how the soil can be used in the production of crops and fodder.

## **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Display a good command of the basic terminologies used in soil science; and
- Explain the principles underlying the use of soil in the production of various crops and fodder.

## **Content**

Introduction: the process of soil formation, classification, mineral deposition, soil profile, soil components, soil as a medium of plant growth, humus formation and properties, physical-chemical properties of soil colloids, pH, and buffering. Soil mechanics, physical and biological agents in soil structure formation, water movement in the soil, soil atmosphere and gaseous exchange; effects of soil physical properties on tillage operations.

Nutrient availability in soils, major and minor nutrients, C/N ratio, principal fertilizers and their use, nutrient losses from soils, and the use of organic manures. Plant growth requirements, soil factors affecting root growth, Growth, respiration and nutrient uptake, ion absorption by cells, transport, distribution, and accumulation of ions within the plant.

## **Suggested Practicals**

1. Tours—soil profile viewing and analysis;
2. Soil sampling survey; and
3. Soil sampling for fertility analysis.

## Year 1: Semester 2

<b>Course No. AG-DS 08</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Introduction to Animal Production</b>

### Purpose

This course unit exposes learners to the basic principles of animal production so that they can understand the factors that influence the productivity of farm animals.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Acquire the necessary knowledge and skills required for profitable animal production practices;
- Produce farm animals to cater for the protein needs of the population; and
- Apply principles for preventing and controlling pests and diseases of farm animals and improve the productivity of the farm animals.

### Content

Definition and introduction to the field of animal husbandry; land use in Kenya in relation to livestock production; effects of climate on livestock; livestock distribution; livestock development policy; principles of animal breeding, and nutrition. Dairy and beef, sheep and goat, poultry (chicken), pig and rabbit, and beekeeping production systems and their routine management practices- breeds, feeding, housing and equipment and records. Handling, processing and marketing of livestock products.

### Teaching Methods

Lectures, discussions, practicals, and field visits.

### Suggested Practicals

1. Farm visits;
2. Breeding records and selection of breeding stock;
3. Artificial insemination;
4. Feedstuffs identification, rationing and mixing of feeds and a visit to a feed mill;
5. Breed identification and points of the various types of farm animals;
6. Handling tools and equipment;
7. Selection, judging and culling of cattle;

8. Milking, milk hygiene and recordkeeping;
9. Sexing, culling and selection of birds;
10. Vaccination and general hygiene of various farm animals;
11. Dressing of broilers;
12. Handling of pigs—tooth clipping, iron injection, and moving them from one point to another;
13. Wool shearing and hoof care; and
14. Hive construction, bee-handling equipment, and honey harvesting.

<b>Course No. AG-DS 09</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Leadership in Agribusiness</b>

### **Purpose**

This course unit provides learners with the necessary leadership and communication skills for effective participation in agribusiness organizations.

### **Learning Outcomes**

By the end of this unit, the learner should be able to:

- Demonstrate agribusiness leadership roles and behavior;
- Acquire personal mastery principles as they relate to agribusiness leadership;
- Determine perceptions necessary for agribusiness leadership;
- Demonstrate agribusiness leadership by communicating fluently; and
- Solve agribusiness leadership problems.

### **Content**

Leadership theories, roles and styles; leadership qualities; goal setting; characteristics of successful leadership in agribusiness; democratic processes; problem solving and decision making; self-concepts; legitimization and effectiveness; leadership traits, leadership styles; goal setting; small and large group dynamics, motivation and training on becoming an effective leader; unsuccessful leaders, leadership and change management, small and large group dynamics; communications and speaking skills.

## Teaching Methods

Lecturettes, case studies, field visits, guest speakers, class discussions and presentations

<b>Course No. AG-DS 10</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Information Systems in Agribusiness</b>

## Purpose

To enable the learners develop information systems for agricultural development and demonstrate the great potential of ICT in socio-economic development.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Develop an information system that can capture, store, manage, and distribute data;
- Harness ICT tools effectively to compete in complex, rapidly-changing global markets; and
- Utilize innovative ICT approaches for technology transfer and dissemination.

## Content

Introduction to information systems: competitive and strategic uses of information systems; how information systems are transforming organizations and their management; and the issues, difficulties, and opportunities facing the technology professional and business manager today. Business information systems development: introduction to the systems development life cycle tools, techniques used to plan and analyze the needs of modern business information systems; business database concepts: database theory, design, and application including the entity-relationship model, the relational, hierarchical, and network database models, and query languages. Internet technologies & web development: advanced topics including Internet technologies, architecture, web services and security; networks and distributed systems: cloud computing and creating applications on cloud computing platforms; advanced topics such as communications protocols, distributed systems, and client-server systems, network architectures, security, and network management; enterprise systems development: capstone course.

## Teaching Methods

Lectures, practicals, group work, and case studies (use of social media, mobile phones, among others).

<b>Course No. AG-DS 11</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Gender in Agribusiness</b>

### **Purpose**

The aim of this course unit is to introduce gender as it relates to agricultural issues and how it can be mainstreamed.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Incorporate and appreciate equity issues and dimensions in agribusiness; and
- Examine gender perspectives in agricultural and food security policies.

### **Content**

Key terms and concepts related to gender; introduction to gender studies; sex and gender; women studies and gender studies; importance of gender studies in agribusiness management; GAD and WID approaches; effects of development on men and women; approaches to gender and development; and gender mainstreaming.

### **Teaching Methods**

Class lectures, class discussions, case studies, and class presentations.

<b>Course No. AG-DS 12</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Statistics for Agribusiness</b>

### **Purpose**

This course unit equips learners with basic statistical tools to collect, analyze, interpret, and present agribusiness data.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Perform basic statistical tasks such as data description and summarizing of data; and
- Perform hypothesis testing on sample means.

## Content

Introduction to statistics: descriptive statistics, inferential statistics, types of data; data collection and survey design: sampling methods, summarizing qualitative data, graphical techniques of describing data, measures of central tendency, and measures of variability; probability: random variables and probability distributions, the binomial distribution, normal distribution, sampling distribution of means, and confidence intervals; hypothesis testing: null and alternative hypothesis, one- or two- tail hypothesis testing; introduction to correlation and regression: scatter plots, correlation, and simple linear regression.

## Teaching Methods

Participatory lectures, group discussions, power point presentations, group activities, exercises, and computer lab work.

<b>Course No. AG-DS 13</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Annual Crops</b>

## Purpose

This course unit introduces learners to the principles and procedures of the production of annual crops.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Display a good command of the basic terminologies used in annual crop production;
- Explain the principles underlying the production of various horticultural crops;
- Describe how various annual crops are grown; and
- Advise stakeholders on how to solve the various production and marketing challenges facing them.

## Content

Importance, ecology, production procedures, harvesting and post-harvest handling of maize, sorghum, millet, rice, wheat, barley, beans, pigeon peas, groundnuts, soya beans, simsim, rapeseed, sunflowers, cassava, cotton, and tobacco.

## Suggested Practicals

1. Land preparation;
2. Planting;
3. Fertilizer application;

4. Weed control;
5. Pest and disease control;
6. Harvesting and post-harvest handling;
7. Estimation of yields; and

Tours to areas of interest

## Year 2: Semester I

<b>Course No. AG-DS 14</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agribusiness Marketing</b>

### Purpose

The course unit enhances the agribusiness marketing knowledge and skills of the learner.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the role of marketing in agri-enterprises;
- Describe the factors affecting supply and demand of agribusiness products;
- Discuss the importance of marketing survey;
- Explain the important marketing elements in agribusiness.

### Content

Marketing functions and mechanisms: the 4Ps of marketing; factors affecting demand and supply of agribusiness products; the law of diminishing returns; cost concepts; returns and economies of scale; the importance of market surveys and research in agribusiness marketing; creating demand for agribusiness products; market entry strategies and market development; trade and economic growth.

### Teaching Methods

Lectures, group discussions, market simulations, field visits, and guest speakers.

<b>Course No. AG-DS 15</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Supply Chain Management</b>

### **Purpose**

This course unit introduces the general framework of supply chain management and analyzes the key drivers of supply chain performance.

### **Learning Outcomes**

By the end of the unit, the learner should be able to;

- Define a supply chain;
- Identify the components of a supply chain;
- Explain the drivers of supply chain; and
- Effectively manage a supply chain.

### **Content**

Meaning and importance of supply chain; components of a supply chain; distinction between supply and value chain; supply chain drivers; supply chain and business performance; the agricultural supply chain.

### **Teaching Methods**

Lectures, group discussions, field visits, and observations

<b>Course No. AG-DS 16</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Critical Thinking and Logic</b>

### **Purpose**

To provide a comprehensive and highly practical approach to tackling challenging situations systematically, thinking them through and swiftly considering all options.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Gain absolute clarity on what structured thinking is and why it's important;
- Challenge habitual thinking patterns; and

- Develop new patterns of thinking.

## Content

How people reason; meaning of critical thinking; evolution of critical thinking; trends in critical thinking; fallacious thinking; basic formal and informal fallacies of language and thought; systems thinking; causal connections in systems, system goals and creating models, psychological impediments to cogent reasoning, analyzing arguments and constructing cogent arguments; tools used for critical thinking; elementary inductive and deductive reasoning; truth and knowledge; assumptions upon which conclusions depend.

## Teaching Methods

Class lectures, class discussions, case studies, and class presentations

<b>Course No. AG-DS 17</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Fundamentals of Food Science and Technology</b>

## Purpose

This course unit is designed to introduce learners to the basic fundamentals of food science and the underlying technology associated with providing a safe, nutritious, and abundant supply of fresh and processed foods to humans.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Describe the terms: food, food industry, food science, nutrition, food technology, food security, and nutritional security;
- Describe the major characteristics of the various types of foods;
- Understand the fundamentals of food chemistry, nutrition, food microbiology, biotechnology, food engineering, post-harvest technology, food processing, packaging, preservation, food quality factors, standards and legislation; and
- Explain the relevance and importance of the profession of food science and technology to the human society.

## Content

General introduction to food science, post-harvest technology and nutrition; historical developments in food science and technology, food security and nutritional security; fundamentals of food chemistry; fundamentals of post-harvest technology; fundamentals of human nutrition; fundamentals of food engineering and packaging; fundamentals of food processing; fundamentals of food microbiology and biotechnology; fundamentals of food quality; and food safety and standards.

## Teaching Methods

Lectures, laboratory practicals, fieldwork, discussions, and case studies.

<b>Course No. AG-DS 18</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agricultural Production Systems</b>

## Purpose

To equip the learners with the relevant concepts of crops, agroforestry, aquaculture and livestock production systems and practices (with an agribusiness orientation).

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Describe major cropping systems;
- Explain crop indices;
- Use water and soil resources for sustainable crop production;
- Advise on agroforestry practices; and
- Understand aquaculture systems.

## Content

Cropping systems: definition, indices and importance; physical resources, soil and water management in cropping systems; assessment of land use; concept of sustainability in cropping, agroforestry and aquaculture systems, scope and objectives; production potential under monoculture cropping, multiple cropping, alley cropping, sequential cropping and intercropping, and mechanisms of yield advantage in intercropping systems.

## Teaching Methods

Lectures; self-study/assignments; group work and presentations; field work; field trips, and case studies.

<b>Course No. AG-MS 19</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Creativity and Innovation for Agripreneurship</b>

### **Purpose**

This course unit develops and enhances individual and organizational creativity and innovation for agribusiness.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Develop innovative agribusiness enterprises;
- Generate patentable innovations in the agriculture sector; and
- Promote innovations in agribusinesses.

### **Content**

Meaning of agripreneurship; agribusiness product and service needs identification; idea generation; idea screening; creative techniques of generating innovations; innovation-led competitive advantage; patents and patenting; concept of innovation.

### **Teaching Methods**

Lectures, group work, class presentations, field studies, guest speakers, and role modeling.

<b>Course No. AG-DS 20</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Perennial Crops</b>

### **Purpose**

This course unit introduces learners to the principles and procedures of production of perennial crops.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Display a good command of the basic terminologies used in the production of perennial crops;
- Explain the principles underlying the production of various horticultural crops;
- Describe how various perennial crops are grown; and
- Advise stakeholders on how to solve the various production and marketing challenges facing them.

## Content

Importance, ecology, production procedures, harvesting and post-harvest handling of coffee, tea, sugarcane, pyrethrum, cashew nuts, coconuts, and sisal.

## Suggested Practicals

1. Land preparation;
2. Planting;
3. Fertilizer and manure application;
4. Weed control;
5. Pruning;
6. Pest and disease control;
7. Harvesting and post-harvest handling;
8. Visit to a processing factory of interest; and
9. Visit to areas of interest.

## Year 2: Semester 2

<b>Course No. AG-DS 21</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Post-Harvest Technology</b>

## Purpose

To enable the learners' effective adaption of post-harvest technology for agribusiness products.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Understand post-harvest quality concepts;
- Explain basic post-harvest technologies; and
- Describe the various components of post-harvest handling.

## Content

Factors affecting the post-harvest quality of agribusiness products; grading and standardization; post-harvest management procedures; packing and packaging, low-temperature storage, chilling, refrigeration and freezing; harvesting and post-harvest handling systems for agribusiness products; packinghouse facilities and equipment, packaging, containers, unitization and cull utilization.

## Teaching Methods

Participatory lecture-discussions, power point presentations, workshops, small group activities and discussions, case studies, and visits to firms.

<b>Course No. AG-DS 22</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agribusiness Small Enterprise Management</b>

## Purpose

This course unit enhances the ability of the learner to effectively manage an agribusiness enterprise.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the difference between small and medium enterprises;
- Design enterprise growth plan; and
- Explain the role of innovation in enterprise development.

## Contents

Introduction to small-scale enterprises; small and medium enterprises; employment and enterprise analysis; growth and equity through micro and small enterprises; flexibility and networking in the agribusiness sector; financing small and medium enterprises; product quality; innovations and skill development; and innovative approaches in small agribusiness management.

## Teaching Methods

Lectures, class discussions, field visits, guest speakers, and use of audio-visual materials.

<b>Course No. AG-DS 23</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Procurement and Logistics Management</b>

### **Purpose**

This course unit provides learners with knowledge and skills in the area of procurement, stores management, supply chain management, and logistics management.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Understand contracts and their role in procurement;
- Plan the logistics of a procurement system;
- Be aware of the policies governing procurement process; and
- Adhere to the requisite procurement acts and regulations.

### **Content**

Definition of procurement; basic procurement/ purchasing procedures; tendering procedures; principles of logistics; logistic information system; inventory management; materials flow and transport management; warehousing; material handling; organization of logistics; factors to consider in choice of logistic options for agribusiness; overview of procurement and disposal acts.

### **Teaching Methods**

Lectures, field visits, and case studies.

<b>Course No. AG-DS 24</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Principles of Agricultural Extension</b>

### **Purpose**

To introduce the learners to the need, nature, and importance of extension services.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Disseminate useful knowledge and information relating to agriculture, including the use of improved technologies and improved cultural practices in a variety of farming practices;

- Develop frameworks for improving all aspects of rural people’s lives within the framework of national development policies and people’s need for development; and
- Adjust to different cultural environments and appreciate societal norms and practices.

### **Content**

Meaning and objectives of agricultural extension; the role of extension workers; history and organization of extension services in developing countries; selected extension methods and techniques; the extension process; meaning of rural sociology; rural leadership patterns and community organization; ethical issues relating to surveys/ data collection; principles and philosophy of extension communication; extension models and processes and adult learning.

### **Teaching Methods**

Lectures, class discussions, case studies, and class presentations.

<b>Course No. AG-DS 25</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Agricultural and Agribusiness Policies and Laws</b>

### **Purpose**

The course unit is intended to provide learners with knowledge and practical skills in agricultural and agribusiness policies and laws.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Explain various agricultural and agribusiness policies and laws; and
- Apply agricultural and agribusiness policies and laws.

### **Content**

Role and importance of agricultural and agribusiness policies and laws; planning, establishment and implementation of agribusiness enterprises; sustainable natural resource management regulations; food security and nutrition, food safety and food quality standards; compliance with statutory regulations; marketing and trade in agricultural and agribusiness commodities; agricultural and agribusiness credit access, and agribusiness ethics.

### **Teaching Methods**

Lectures, group discussions, case studies, guest speakers, student attachment, practicals, and fieldwork.

## Methods of Evaluation

Coursework, projects, field attachment, assignments, and tests.

<b>Course No. AG-DS 26</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Human Resource Management</b>

## Purpose

The course unit is designed to provide basic principles of human resource management.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the role of human resource management in agribusiness;
- Discuss human resource theories;
- Describe the qualities of a human resource manager; and
- Explain the functions of human resource management.

## Content

Concepts, models and theories of human resource management; work organization; nature and importance of human resource management; characteristics and qualities of a human resource manager; objectives of human resource management; and functions of human resource management.

## Teaching Methods

Lectures, guest speakers, field visits, and group and class discussions.

<b>Course No. AG-DS 27</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Non-Ruminant Production Systems</b>

## Purpose

This course unit introduces learners to the management of non-ruminant animals.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Display a good command of the basic terminologies used in non-ruminant production systems;
- Describe the importance of non-ruminant animals in an agribusiness; and
- Manage various non-ruminant animals.

## Content

Importance of non-ruminant animals in agriculture; breeds and types of poultry, rabbits, and bees; systems of raising non-ruminants; management practices in breeding and feeding of non-ruminants; structural aids to handling and environmental control for non-ruminant animals; and non-ruminant products, handling and marketing.

## Suggested Practicals

1. Identification of breeds;
2. Breeding management;
3. Feeding management;
4. Dressing; and
5. Handling of honey, eggs etc.

<b>Course No. AG-DS 28</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Internship (8 Weeks)</b>

## Year 3: Semester I

<b>Course No. AG-DS 29</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Food Processing and Preservation</b>

### Purpose

To equip the learners with knowledge and skills on the application of basic processing and preservation methods of food.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the nature and importance of food processing and preservation;
- Describe the different food processing and preservation methods; and
- Apply basic food processing and preservation techniques.

### Content

The role of food processing and preservation in agribusiness; technological influences on food availability and processing of selected products; nutritional value as influenced by technology; food policies and the influence of food choices; food processing and preservation techniques; advantages and disadvantages of food processing and preservation.

### Teaching Methods

Lectures, use of guest lecturers from industries, incubation, industrial visits, and case studies.

<b>Course No. AG-DS 30</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Developing Business Models</b>

### Purpose

The course unit enables learners develop innovative business models for competitive advantage in agribusiness.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the meaning of a business model;

- Differentiate between a business model and a business plan;
- Design a business model; and
- Evaluate the performance of a business model.

### **Content**

Meaning of a business model; the difference between business models and business plans; the business model canvas; mechanics of a business model; the design of business models; application of the business model canvas; and evaluation of the business model performance.

### **Teaching Methods**

Lectures, group discussions, market simulations, and field visits.

<b>Course No. AG-DS 31</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agribusiness Strategic Management</b>

### **Purpose**

The course unit equips the learners with knowledge and skills to develop, implement and evaluate a strategic plan.

### **Learning Outcomes**

By the end of the lesson, the learner should be able to:

- Develop a successful agribusiness strategy;
- Implement a business plan; and
- Evaluate business plans.

### **Content**

Definition of a business strategy; strategic business unit; strategy development and implementation; strategic focus; differentiation; low-cost and pre-emptive move; growth strategies; market penetration; market development; product development; diversification and vertical integration.

### **Teaching Methods**

Lectures, group discussions, field visits, and projects.

<b>Course No. AG-DS 32</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Rural Sociology</b>

## Purpose

To introduce the learners to the general principles of rural sociology and the connections between rural and urban areas.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Identify the different types of societies found in rural areas and their specific problems;
- Describe how the rural areas of this country are divided into the urban-rural fringes, agricultural areas, resource-dependent areas, fishing areas etc.;
- Identify the specific problems found in each of these areas that differentiate them from the dominant urban areas; and
- Integrate economic conditions with sustainable development in rural areas.

## Content

Concepts in rural sociology; social bases of human behavior, social inequality, social institutions and social change; social organization in rural societies: groups, organizations, institutions, and communities. Social process operating within these areas; the significance of problems of personality, human nature, social disorganization, and social change. Different types of rural communities with background in agriculture, livestock, fishing, logging and mining. Analysis of human society and the individual as a member of the family, the community and other social systems; rural sociology and its importance; culture and its importance, cultural change and effects of the change; group relations; kinds of social groups and their importance; social structure and its implication to social change; power and community decision making processes; social change diffusion and adoption process; gender as a social relation and the social construction of gender; rural development; theories of development; underdevelopment and growth; indicators of economic development; rural development; and agricultural development

## Teaching Methods

Lectures, group discussions, and class presentations.

<b>Course No. AG-DS 33</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Introduction to Research Methods</b>

### **Purpose**

The purpose of the course unit is to equip learners with basic skills of conducting research and proposal writing.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Write a project proposal.

### **Content**

Introduction to research methods and the importance of research; sources and types of data; data collection methods and analysis; research design; research tools and their usage; sampling methods; results interpretation and reporting; and writing project proposals.

### **Teaching Methods**

Participatory lectures, group discussions, power point presentations, group activities, exercises, and case studies

<b>Course No. AG-DS 34</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agribusiness Project Management</b>

### **Purpose**

This course unit equips the learners with the necessary knowledge and skills to develop, manage, monitor and evaluate an agribusiness project.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Differentiate projects and programs;
- Develop an agribusiness project;
- Describe the various stages of project cycle; and
- Monitor and evaluate an agribusiness project.

## Content

Agribusiness project definition; agribusiness projects and programs; project development; project cycle management; project management tools; project teams; group dynamics and project leadership; project monitoring and evaluation.

## Teaching Methods

Lectures, field visits, evaluations of existing projects, and guest speakers.

<b>Course No. AG-DS 35</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Ruminant Production Systems</b>

## Purpose

This course unit introduces learners to the management of ruminant animals.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Display a good command of the basic terminologies used in ruminant production systems;
- Describe the importance of ruminant animals in an agribusiness; and
- Manage various ruminant animals.

## Content

Importance of ruminant animals in agriculture, breeds and types of dairy and beef cattle, sheep, goats and camels; systems of raising ruminant animals; management practices in breeding and feeding of ruminants; structural aids to handling and environmental control for ruminants; ruminant products, handling, and processing.

## Suggested Practicals

1. Identification of breeds;
2. Judging;
3. Ruminant-handling tools;
4. Feeding; and
5. Product handling, and processing.

## Year 3: Semester 2

<b>Course No. AG-DS 36</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agribusiness and Social Entrepreneurship</b>

### Purpose

This course unit introduces the concept of social entrepreneurship in agribusiness.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the meaning of social entrepreneurship in agribusiness;
- Assess the role of social entrepreneurship in agribusiness; and
- Identify factors affecting social entrepreneurship in agribusiness.

### Content

Social entrepreneurship and agribusiness: social entrepreneurs and agribusiness development; attributes of a social entrepreneur; functions of social entrepreneurship; factors affecting social entrepreneurship in agribusiness; evaluation of the contribution of social entrepreneurship in agribusiness.

### Teaching Methods

Lectures, case studies, guest speakers, and field visits.

<b>Course No. AG-DS 37</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>International Trade in Agribusiness</b>

### Purpose

This course unit highlights the theories underlying international trade and familiarizes learners with the tools used in analyzing international trade.

### Learning Outcomes

By the end of the unit, the learner should be able to:

- Understand the theories of international trade in agribusiness;
- Understand the role of trade organizations; and

- Understand international trade policies.

## Content

Definition of international trade; theory of comparative and absolute advantage; introduction to the theories of international trade; quotas, tariffs and other trade restrictions; international movement of material and capital; trade policies: import substitution, export promotion; world and regional trade organizations.

## Teaching Methods

Lectures, class discussions, case studies, guest speakers, and field visits to observe border trade

<b>Course No. AG-DS 38</b>	<b>Credits: 2</b>
<b>Course Name</b>	<b>Environmental Policies and Laws</b>

## Purpose

To provide knowledge in environmental policies and laws.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain various environmental policies and laws governing agriculture and agribusiness; and
- Demonstrate the application of environmental policies and laws in agriculture and agribusiness.

## Content

Environmental policies and laws; the role of the National Environmental Management Authority (NEMA); Environmental Impact Assessment (EIA); environmental standards and enforcement; environmental conservation strategies; regulation of toxic waste and substances; GMOs and food safety; conventions on climate change, biodiversity conservation and desertification; sustainable natural resource management laws and policies (e.g. land use laws; water resource laws; energy conservation acts like the Forest Act; the Wildlife Act; the Fisheries Act; the Public Health Act; and the Factories Act.

## Teaching Methods

Lectures, group discussions, case studies, guest speakers, practicals, and fieldwork.

## Methods of Evaluation

Coursework; projects, field attachment, assignments, and tests.

<b>Course No. AG-DS 39</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Business Psychology</b>

### **Purpose**

The aim of this course unit is to give non-psychology learners an understanding of the theories and their applications in current business psychology.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Acquire the latest techniques of psychology; and
- Evaluate psychological facts and standards for scientific evidence.

### **Content**

Meaning of business psychology: an overall introduction to the topic; the history of business psychology; personality at work: trait predictors of work output; bio-data methods and their limitations; work attitudes and values: specifically whether they predict work behavior; theories of work motivation; comparisons and contrasts of various theories; job satisfaction: what the causes and consequences are; managing stress at work; group dynamics: inter- and intra-group behavior; decision making: specifically individual vs. group decisions; leaders and leadership: historical trends and current theories.

### **Teaching Methods**

Class lectures, class discussions, case studies, and class presentations.

<b>Course No. AG-DS 40</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Agricultural Development</b>

### **Purpose**

The purpose of the course unit is to equip the learners with the concepts and knowledge on agricultural policies and strategies and their impact on rural development.

### **Learning Outcomes**

By the end of the unit, the learner should be able to:

- Explain the causes of rural-urban development disparities;

- Describe the models of agricultural growth; and
- Explain the relationship between agricultural development and economic growth.

## Content

Agricultural development: the historical perspective; models of agricultural growth; determinants of rural-urban disparity; the role of technology in agricultural growth; the interdependence between agricultural growth and economic growth; growth, inequality and poverty; models for the analysis of food security and sustainable agriculture; and agricultural development issues in the region.

## Teaching Methods

Lectures, group discussions, and case studies.

<b>Course No. AG-DS 41</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Land, Forest and Water Resource Management</b>

## Purpose

The purpose of the course unit is to equip the learners with knowledge and skills on sustainable land and water resource management.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Explain the principles of land resource management and associated problems;
- Explain the principles of water resource management and associated problems; and
- Describe the conservation and improvement of water and land resources.

## Content

Principles of land management; land resources evaluation; man-land relationship; present and future land requirements; present land use, and its problems; institutional arrangements affecting land use and reclamation; conservation and improvement; zoning and efficient use of land resources; and land reforms. Water as a scarce resource; water markets; water policy and resource allocation problems; water resource development, planning and management; methods of water application and water use efficiency; water losses and measures; investment strategies for irrigation; water logging and salinity issues; drainage of irrigated soils; and environmental, social and political dimensions of water use.

## Teaching Methods

Lectures, group discussions, practicals, and field visits

<b>Course No. AG-DS 42</b>	<b>Credits: 3</b>
<b>Course Name</b>	<b>Introduction to Horticulture</b>

## Purpose

This course unit introduces learners to the principles of horticultural crop production.

## Learning Outcomes

By the end of the unit, the learner should be able to:

- Display a good command of the basic terminologies used in horticultural crop production;
- Describe how various horticultural crops are grown; and
- Advise stakeholders on how to solve the various production and marketing challenges facing them.

## Content

Definition of horticulture; divisions of horticulture i.e., olericulture, pomology, floriculture; factors that determine a crop to be a horticultural crop; importance of horticultural crops; potential of the industry in Kenya; nursery establishment and management (siting, preparation, layout, etc.); propagation structures (greenhouse, hotbed, cold frames), plant propagation by either seed or vegetative structures, methods of vegetative propagation (budding, grafting, layering, cuttings); floriculture—the main cut flowers; olericulture and pomology (the following crops should be covered using the following format: importance of the crop, origin, ecology, plant characteristics, variety & cultivars, harvesting, storage & marketing):- brassicas, solanaceae, legumes, root crops, bulb crops, cucurbits, indigenous vegetables, Asian vegetables, tropical fruits like citrus, bananas, passion fruits, papaws, mangoes, pineapples, avocados and mangoes, temperate fruits like plums, apples, pears, peaches, and strawberries, and nuts like macadamia

<b>Course No. AG-DS 43</b>	<b>Credits: 4</b>
<b>Course Name</b>	<b>Internship (8 Weeks)</b>

