Cooperation for Holistic Agriculture Innovation Nests in Sub-Saharan Africa

GRANT AGREEMENT NUMBER 101082963

D2.6 Description of new degree FVC Master Programs

Project title	CHAIN- Cooperation for Holistic Agriculture Innovation Nests in Sub-Saharan Africa
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Deliverable number	D2.6
Title of the deliverable	Description of new degree FVC Master Programs
WP contributing to the deliverable	WP 2 – Curricula innovation
Deliverable type	Report

Consortium partners	University of Weihenstephan-Triesdorf (HSWT/Germany) Universite de Kara (UK/Togo) Universite de Lome (UL/Togo) South Eastern Kenya University (SEKU/Kenya) Jaramogi Oginga Odinga University of Science and Technology (JOOUST/Kenya) Farming Systems Kenya (FSK/Kenya) Federal University Of Technology, Minna (FUTMINNA/Nigeria) Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI/Nigeria) Uniwersytet Przyrodniczy We Wroclawiu (UPWR/Poland) Universitatea Pentru Stiintele Vietii "Ion Ionescu De La Brad" Din Iasi (IULS/Romania)
Target groups (TG) and Final Beneficiaries (FB)	The set objectives aim to respond to the needs of respective HEIs in SSA, their students and employees, farms and farmers, as well as to the needs of all those potential stakeholders who share the same interest in the field of agricultural production or agriculture studies.

Objectives and Outputs	OVERALL OBJECTIVE: To support partner HEIs in Africa in improving the relevance and inclusiveness of higher education SPECIFIC OBJECTIVES: SO1) To develop a master program in Food Value Chain (FVC) at 6 SSA beneficiary HEIs in the period of 18 months (including accreditation process). The innovative program is multidiscipline and prone to innovation considerations around the FVC which is highly relevant to students' uptake, labour market and education skills gap and sustainable employment. SO2) To build capacity of 108 teachers at 6 partner HEIs to use and further promote learning methods and use of teaching methodology prone to entrepreneurial thinking and innovation, with emphasis on e-learning and digital tools over the 9 months period of time.
D2.6 Description of new degree FVC	Each of partner HEIs will create description of new Master degree FVC with detailed description of length of study, modules developed, syllabus for modules and teaching materials. This is related to MS1. In Togo, the two partner universities (University of Lome and University of Kara) are jointly developing a single master's curriculum in the field of food value chains. Each university will implement the Mster program independently and award its own degree. **1. FEDERAL UNIVERSITY NDUFU ALIKE IKWO (Nigeria):** Here we have designed a new Master course Agribusiness and Management (General) and an option for specialication with an Master in Food Value Chain Management (started in March 2025): Total Master program is 3 Semesters: **41 Nigerian Credits * 1,5 = 61,5 ECTS** 1 Nigerian Credit = 45 hours (15hours (presential/Contact) + 30 hours (for student)) **2. FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA (Nigeria):** New Master of Technology Degree programme in Food Value Chain Management (started in March 2025): Total Master program is 3 Semesters: **35 Nigerian Credits * 1,5 = 52,5 ECTS** 1Credit = 45 hours (15hours (presential/Contact) + 30 hours (for student)

	3. **JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY (Kenya):** Master of Science in Agricultural commodities value chain management (planned start September 2025): 12 Units 1 Unit = 3 Credit = 135 hours 12 Unit * 3 Credits = **36 Credits** Total Master program is 3 Semesters: **36 Kenyan Credits * 1,5 = 54 ECTS** 4. **SOUTH EASTERN KENYA UNIVERSITY (Kenya):** Master of Science in Food Value Chain Management (planned start September 2025): 13 Units 1 Unit = 3 Credits = 135 hours 13 Unit * Credits = **39 Credits** Total Master program is 3 Semesters: **39 Kenyan Credits * 1,5 = 58,5 ECTS** 5. **Kara and Lome University (Togo):** Master in conservation and processing of agricultural products (planned start September 2025): 120 Togo Credits = 120 ECTS Total Master program is 4 Semesters: **120 ECTS**

	ECTS System	AEFUNAI/ Nigeria	FUTMINNA/ Nigeria	JOOUST/ Kenya	SEKU/ Kenya	Lome+Kara/ Togo
Hours spend for lecture per week	1	1	1	1		1
Hours spent in self study per week	1	2	2	2		1
Number of weeks in a semester	15	15	15	15		5
ECTS : Home Credits	1	1:1,5	1:1,5	1:1,5	1:1,5	1:1
Total Credit	120	41	36	36	39	120
Semester	4	3	3	3	3	4
Total ECTS	120	61,5	52,5	54	58,5	120

Further Explanantion on Credit Point System:

What Does ECTS Mean?

ECTS stands for **European Credit Transfer and Accumulation System**. It's a standardized system across Europe for measuring and comparing academic achievements at universities and other higher education institutions.

What Does One ECTS Credit Represent?

One **ECTS credit** reflects the **workload** required by a student to complete a course or module. This includes:

- Time spent in lectures and seminars
- Self-study
- Preparing for exams
- Writing papers or completing projects
- Internships (if part of the curriculum

How Much Is One ECTS Credit Worth?

- **1 ECTS credit equals approximately 25 to 30 hours of work**.
- A full-time academic year typically includes **60 ECTS credits**, which corresponds to **1,500 to 1,800 hours** of total workload.
- A **Bachelor's degree** usually requires **180 to 240 ECTS credits**, while a **Master's degree** requires **60 to 120 ECTS credits**.

What Is the Purpose of the ECTS System?

- **Comparability**: Makes academic achievements comparable across Europe.
- **Mobility**: Facilitates student exchanges and transfers between institutions.

- **Transparency**: Clearly shows the effort required for each module.
- **Recognition**: Helps with the recognition of academic work when changing universities or studying abroad.

1. ECTS (European Credit Transfer and Accumulation System)

- **Workload-based**: 1 ECTS = **25–30 hours** of total student workload.
- **Full-time academic year**: 60 ECTS credits.
- Used across Europe to standardize and transfer academic credits between institutions.
- Includes lectures, self-study, assignments, and exams.
-

2. Nigerian University Credit System

- **Lecture-hour based**: 1 credit unit typically equals **1 hour of lecture per week** over a semester (or 2–3 hours of lab/practical work).
- **Full-time academic year**: Usually **40–50 credit units**.
- Focuses more on **contact hours** than total workload.
- Used for calculating GPA/CGPA and degree classification.

Conversion Between Nigerian Credits and ECTS

There's no universal formula, but a common method is:

- **60 ECTS credits ≈ 40 Nigerian credit units**
- So, **1 Nigerian credit unit ≈ 1.5 ECTS credits**

Example:

- A 3-credit course in Nigeria ≈ **4.5 ECTS credits**
- A 2-credit course in Nigeria ≈ **3 ECTS credits**

This ratio can vary depending on the university and the actual workload involved

https://purplebook.ng/wp/everything-you-need-to-know-about-the-ects-credit-system-as-an-international-student-2/

2. Kenyan University Credit System (KCATS)

- **Basis**: Primarily **contact hours** (time spent in lectures, labs, tutorials).
- **1 credit unit** = typically **15 contact hours** of lectures or **30–45 hours** of practical/lab work per semester
- A full-time academic year usually includes **36–48 credit units**, depending on the program.
- Managed under the **Kenya Credit Accumulation and Transfer System (KCATS)**, which allows for credit transfer between institutions and recognition of prior learning .

- Focuses more on **course content and delivery time** than total workload.

Conversion (Approximate)

There's no exact formula, but a rough estimate is:

- **1 Kenyan credit unit ≈ 1.5 to 2 ECTS credits**
- So, a 3-credit course in Kenya ≈ **4.5 to 6 ECTS credits**

This depends on the actual workload and structure of the course.

2. Togolese University Credit System

Togo follows the **LMD system** (Licence–Master–Doctorat), which is modeled after the **Bologna Process**—the same framework that underpins ECTS. Therefore:

- **Togolese universities use a system compatible with ECTS**.
- A **Licence (Bachelor's degree)** typically requires **180 ECTS credits** over 3 years.
- A **Master's degree** requires **120 ECTS credits** over 2 years.
- The credit structure is **essentially the same as ECTS**, meaning **1 Togolese credit = 1 ECTS credit** in most cases.

Disclaimer

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Contents

ALEX EKWUEME FEDERAL UNIVERSITY NDUFU-ALIKE, EBONYI STATE, NIGERIA (AE-FUNAI)

DEPARTMENT OF AGRIBUSINESS AND MANAGEMENT

PROPOSED CURRICULUM

FOR

POSTGRADUATE PROGRAMME IN MASTER OF SCIENCE (M.Sc.) DEGREE IN AGRIBUSINESS AND MANAGEMENT (WITH SPECIALIZATION IN FOOD VALUE CHAIN MANAGEMENT)

Table of Contents

1.0 Background of the Programme

Agriculture occupies a central position in Nigeria's economy, contributing significantly to employment and gross domestic product. Despite the significant contribution, the agricultural sector's performance has not fully met the nation's needs, with food production continually falling short of demand. This has resulted in structural deficits in the supply of major commodities and highlighted the need for a strategic overhaul.

The essence of agriculture in Nigeria encompasses both food security and agribusiness dimensions—the former being largely driven by social utility and the latter by private profit. As the foundational pillar of food systems, agriculture plays a crucial role in providing food, raw materials, income for farmers, employment opportunities, and foreign exchange. This dual importance underscores the government's commitment to the sector's development, aiming to ensure the increased availability and affordability of nutritious food sustainably.

However, the path to realizing these goals has been hindered by challenges including limited uptake of productivity-enhancing technologies; low agricultural productivity and value addition due to insufficient research, innovation, and extension services; poor-quality inputs; poor access to finance and markets; and policy implementation bottlenecks.

The Nigerian agricultural sector's landscape has witnessed an increase in private sector involvement, coupled with a gradual reduction in government intervention. This aligns with the Comprehensive Africa Agriculture Development Programme (CAADP) pillars and principles. Despite these strides towards self-sufficiency many agricultural commodities have seen less progress in their development and promotion, crucial for commercialization, food and nutrition security in the nation.

Furthermore, the lack of value addition in agricultural products is a significant challenge. A critical examination reveals that the agribusiness and food value chains in Nigeria is underdeveloped, characterized by fragmented supply chains, inadequate infrastructure, and a lack of integration between the various segments of production, processing, and distribution. Most agricultural produce in Nigeria is sold as raw materials with minimal processing or branding, which considerably reduces its potential value. This situation is compounded by inadequate infrastructure, such as processing facilities, and logistical challenges, leading to post-harvest losses and diminished product quality by the time it reaches consumers.

Additionally, there's a broader challenge related to the agribusiness environment itself. Issues such as limited access to finance for agribusinesses, inadequate market information, and poor access to technology for productivity enhancement directly affect the ability of producers to meet consumer needs effectively. These challenges also hinder the development of robust value chains that could facilitate better integration of production, processing, and distribution, thereby enhancing the overall quality and availability of value-added agricultural products.

Addressing these challenges necessitates a concerted effort to enhance agribusiness education and training, focusing on equipping professionals with the knowledge and skills to innovate and adapt to market needs. There is a clear need for programmes that not only tackle the technical aspects of agriculture but also emphasize market-oriented strategies, consumer

behavior understanding, and value chain development. By focusing on these areas, it is possible to bridge the gap between production and market demand, ensuring that agricultural products are aligned with consumer expectations and market trends.

Recognizing these challenges and the strategic importance of agriculture to Nigeria's socio-economic development, the Faculty of Agriculture at Alex Ekwueme Federal University, Ndufu-Alike, Ebonyi State, Nigeria (AEFUNAI) proposes a master's degree programme in Agribusiness with Specialization in Food Value Chain Management. This innovative programme is carefully designed to bridge the knowledge and skill gaps in Nigeria's agricultural sector. It aims to cultivate a cadre of agribusiness professionals equipped with the expertise to revitalize and sustainably manage agricultural value chains. Situated within a region boasting significant agricultural activity, the University is uniquely positioned to lead this transformative educational endeavor, leveraging its academic excellence, research capabilities, and strategic partnerships.

2.0 Rationale for the Programme

Previous agricultural policies such as the Agricultural Transformation Agenda (ATA), and the Agriculture Promotion Policy (APP), have laid the groundwork for addressing these challenges, with specific objectives aimed at promoting agribusiness and value chains, achieving food security, strengthening research and innovation, and enhancing the standardization and market access of agricultural produce. However, implementation challenges have stifled the anticipated productivity and investment boosts in the agricultural sector, primarily due to technological and knowledge deployment inefficiencies, policy implementation discord, and limited private sector engagement.

The lessons learned from past policies and strategies have informed the development of the National Agricultural Technology and Innovation Policy (NATIP), which aims to leverage 21st-century knowledge and practices to accelerate agricultural development. The strategic direction of the current policy encompasses a mission to deploy cutting-edge knowledge and attract significant investments into agriculture and agribusiness, creating a diversified economy that ensures access to nutritious food, growth, and employment opportunities across agricultural value chains.

In the wake of the existing policies and persistent challenges, the imperative for skill and manpower development in Nigeria's agricultural sector has become increasingly apparent. The agricultural sector's transition towards a technologically driven, market-oriented model demands professionals skilled not only in modern agricultural techniques but also in food value chain management. Also, consumers' needs are of vital importance, hence satisfying consumers' need through value addition to their goods and services along the chain is not negotiable. To achieve efficient food value chain management, food value chain managers that periodically assess consumer needs and production from raw material supply to finish products are important to resolve inconsistencies in the food value chain. To this end a well-trained and sufficiently informed human resource to manage the activities in the different nodes of food value chain is highly needed. This skill set is pivotal for driving innovation,

productivity, and ensuring Nigeria's agricultural competitiveness globally, aligning with current policies' vision for a revitalized, sustainable sector.

In response to this, the master's degree programme in Agribusiness with Specialization in Food Value Chain Management at Alex Ekwueme Federal University, Ndufu-Alike, Ebonyi State, Nigeria (AEFUNAI) emerges as a strategic imperative. Such a programme is envisioned to bridge the gap between policy aspirations and their operationalization, preparing a new generation of agribusiness professionals to lead and innovate within Nigeria's agricultural sector. This initiative aligns with the government's broader economic goals of food security, export diversification, and employment generation, marking a significant step towards harnessing the agricultural sector's potential in driving Nigeria's economic development.

The need for such skilled manpower is the main motivation for establishing a Master of Science (M.Sc) degree programme in Agribusiness with Specialization in Food Value Chain Management as part of the CHAIN project. The programme is designed to produce innovative value chain managers, transition managers, consultants, researchers, quality assurance inspectors, capacity building experts, project/programme managers, policymakers with the needed skills and knowledge to drive agribusiness and food value chain development in Nigeria and elsewhere.

3.0 Philosophy

The philosophy underlying the programme of Agribusiness combines the study of agriculture, business, and management with the aim of producing students with understanding of the economic and business principles that underlie management and their applications to Agriculture and allied businesses. The philosophy of the M.Sc. degree programme in Agribusiness and Management is guided by:

- our holistic perspective on agribusiness which embraces the entire food value chain from farm to fork;
- the concept of adopting an interdisciplinary approach for training in agribusiness and management;
- understanding that sustainable practices in agribusiness, should take into consideration environmental, social, and economic sustainability; and
- our recognition that the interconnectedness of various components within agribusiness (including input supply, production, processing, marketing, and consumption) is necessary for food security and sustainable development.

4.0 Vision

The vision of the M.Sc. degree programme in Agribusiness with Specialization in Food Value Chain Management is to provide competence-based training in food value chain management that will become a standard globally.

5.0 Mission of the University

To train top quality human resource that will propel the development of the country by equipping the graduates with the relevant knowledge and skills required in the marketplace in a globalized world. To take a leading role in fostering the economic development of Ebonyi State and the entire Nigerian society at large through specific education, training, and outreach activities.

6.0 Objectives of the Programme

The overall goal of the Postgraduate programme in Agribusiness and Management is to produce proficient, highly competent and innovative agribusiness and food value chain experts capable of leading the commercialization of the country's agriculture in light of the dynamism of consumer's demand.

The specific objectives of the program are to:

i. expose students to advanced courses in relevant areas of agribusiness management.

ii. train managers who can apply inter-disciplinary approaches in solving agribusiness problems.

iii. equip students with research skills needed to deal with problems facing agribusiness development in developing countries.

iv. train future food value chain facilitators and managers, programme coordinators, transition and innovation managers, policymakers, food quality inspectors, researchers, food value chain consultants, and capacity builders who will take leading roles in the world's agricultural, environmental, and food sectors.

v. train experts who will drive sustainable agricultural commercialization in the country and beyond; and

vi. raise experts who can plan and manage agribusinesses, design policies relevant to agribusiness development, and engage in community development services.

7.0. Admission Requirements

1a. Candidates seeking admission for any postgraduate degree programme in Agribusiness must possess five O/level Credit passes obtained in GCE ordinary level, SSCE, or NECO in not more than two sittings to include: English Language, Mathematics, Economics or Chemistry, Biology (or Agriculture) and any other one subject from: (i) Government/History (ii) Accounting (iii) Christian Religious Knowledge (iv) Geography (v) Commerce (vi) Literature in English (vii) Physics. Also note that the combination of two results of GCE O' level, SSCE, and NECO is accepted provided it gives a candidate at least five subjects. In addition GCE A/L passes or its equivalent in Economics and at least one of the following: (i) Business Management (ii) Accounting (iii) Mathematics (iv) Government (v) Geography.

1b. Bachelor of Science (B.Sc.) degree in Agribusiness and Management, Bachelor of Agriculture (B. Agric.) degree in Agricultural Economics with a minimum Cumulative

Grand Point Average (CGPA) of 2.50 on 5.00 points scale or 2.00 on a 4.00 point scale from a recognized University in or outside Nigeria.

2. Candidates with Animal Science, Crop Science, Soil Science, Forestry and Wildlife, and Fisheries and Aquaculture degrees with a minimum CGPA as above in addition to the O/level requirement in 1a above should take and pass all 400 Level courses of Agribusiness and Management as compensatory courses before proceeding to the Agribusiness Master programme.

3. Candidates with postgraduate diploma from a recognized university with a minimum of Lower Credit (CGPA of 2.50) in Agribusiness and Management, Agricultural Economics may be considered in addition to the O/level requirement in 1a above.

4. All eligible candidates may be required to take and pass an entrance examination (written and/or oral) to be considered for admission.

5. Candidates with PASS grade in first degree, HND, ND or Postgraduate Diploma are NOT qualified for admission.

8.0 Programme Structure and Duration

The M.Sc. degree programme in Agribusiness and Management (with different areas of Specialization including **Food Value Chain Management**) will be by both course work and research. It will run on both full-time and part-time bases. The duration of the programme is as follows:

a. **Full time Structure**

1. Minimum of 3 semesters
2. Maximum of 6 semesters

However, an extension of a maximum of six (6) months beyond the maximum period may be approved by the Senate on recommendation of the Postgraduate School Board.

A minimum of two semesters will be required for course work. Upon completion of course work, a student shall not proceed to dissertation writing stage unless he/she has obtained a minimum Cumulative Grade Point Average (CGPA) of 3.00.

A student must record a minimum of 75% attendance in the course lectures to qualify for the final examination on the course. Meeting this requirement will be based on the Course Lecturer's attendance record.

Results of examinations must be presented to the Postgraduate School Board at the end of each semester for consideration and recommendation. The results will eventually be presented to the University Senate for approval.

b. **Part time Structure**

1. Minimum of 4 semesters

2. Maximum of 8 semesters

However, an extension of a maximum of twelve (12) months beyond the maximum period may be approved by the Senate on recommendation of the Postgraduate School Board.

A minimum of two semesters will be required for course work. Upon completion of course work, a student shall not proceed to dissertation writing stage unless he/she has obtained a minimum Cumulative Grade Point Average (CGPA) of 3.00.

A student must record a minimum of 75% attendance in the course lectures to qualify for the final examination on the course. Meeting this requirement will be based on the Course Lecturer's attendance record.

Results of examinations must be presented to the Postgraduate School Board at the end of each semester for consideration and recommendation. The results will eventually be presented to the University Senate for approval.

9.0 Graduation Requirements

Candidates are required to pass all the courses specified in this curriculum before graduation. The total credit load for all the courses is 34 units. These include 23 units of core/taught courses, 2 units of seminar, 3 units of agribusiness incubation experience, and 6 units of dissertation. A student can only defend his/her dissertation if s/he has paid all her/his fees and passed all courses including agribusiness incubation experience and seminar.

10.0 Degree Nomenclature

Students who have successfully completed graduation requirements can earn the following degree: Master of Science (M.Sc.) degree in Agribusiness (Specialization in Food Value Chain Management).

11.0 Grading

Grading for all courses and dissertation taken under this Master's degree programme shall be as follows:

A - 70% and above
B - 60% - 69%
C - 50% - 59%
F - 0% - 49%

The pass mark for all the courses and dissertation is 50%. Any score lower than this shall be recorded as Failure and the course must be re-taken/repeated at the next available opportunity.

12.0 Course Profile

The course profile for the programme is presented as follows:

12.1. Course coding

The courses offered in the programme will have the code **'ABM'** (except where a course is borrowed from another programme in the University) followed by a three-digit figure. The first digit represents the level, the second digit represents stress/specialization area, and the last digit represents the semester (odd numbers represent first semester and even numbers represent second semester).

Stress/Specialization Area Coding for Agribusiness and Management Courses

0 = Agribusiness and Management (General)

1 = Food Value Chain Management Option

2 = Agribusiness Finance and Investment Option

3 = Agribusiness and Entrepreneurship Development Option

4 = Agribusiness Project Management Option

5 = Agri-Food Policy Systems Option

6 = Export Management Option

7 = Food Security and Climate Change Option

8 = Dissertation

12.2. Distribution of courses by year and semester
Food Value Chain Management Option

Year One: First Semester

Course Code	Course Title	Credit Unit
ABM 801	Advanced Statistical Methods and Econometrics for Agribusiness	3
ABM 803	Managerial Economics in Agribusiness	2
ABM 805	Agricultural Marketing and Agribusiness Organization Management	3
ABM 811	Food Value Chain Management	2
ABM 813	Food Processing Technology	2
ABM 807	Principles of Agripreneurship and Product Development	2
ABM 821	Financial Management, Strategy and Institutions	2
	Total credit	**16**

Year One: Second Semester

Course Code	Course Title	Credit Unit
ABM 802	Research Methods in Agribusiness and Management	3
ABM 804	Agribusiness and Value Chain Incubation	3
ABM 806	Seminar	2
ABM 812	Crop, Livestock and Fish Value Chain Management	2
ABM 814	Sustainability for Commodity and Food Value Chains	2
ABM 808	Digital Technology for Agri-food System	2
ABM 844	Agribusiness Policy and e-business	2
	Total credit	**16**

Year Two

Course Code	Course Title	Credit Unit
ABM 880	M.Sc. Dissertation	6
	Total credit	**6**
	Grand Total	**38**

12.3. Course descriptions

ABM 801 Advanced Statistical Methods and Econometrics for Agribusiness 3 Units

Course Description

This course will expose graduates on types and dimensions of data analysis, the choice of different econometric and statistical tools for agribusiness and food value chain research, the assumptions for the choice of each technique, practical application (using statistical and econometric softwares) of each technique in agribusiness and food value chain research. Students will learn how to use statistical and econometric tools to make informed decisions in the agricultural and food industries.

Course Objectives

The broad objective of this course is to expose students to advanced statistical methods and econometric tools for conducting high-quality research studies in agribusiness and in making agribusiness management decisions. Upon completion of this course, students will be able to:

- discuss types and dimensions of data analysis in agribusiness and social research;
- understand and critique different statistical and econometric tools for agribusiness and food value chain research;
- analyse the assumptions underlying the choice of each statistical and econometric tools for agribusiness and food value chain research;
- estimate and interpret results of each statistical and econometric tools;
- generate and store data in computer mediums and perform appropriate data analysis; and
- interpret and present results of the data analysis.

Course Content

Levels of measurement. Data processing and quality control. Statistical data and their presentation. Types and dimensions of data analysis. Descriptive statistics - Measures of central tendency and dispersion. Probability and probability distributions. Hypothesis testing. Regression and correlation analyses. Problems in regression analysis (e.g., multicollinearity, heteroscedasticity, autocorrelation, errors in variables). Principal component and factor analysis. Non-parametric statistics. Simultaneous equations modeling. Time series and panel data analyses. Using computer applications/statistical software to carry out data analysis.

Mode of Course Delivery

This course will be delivered through lectures, training on use of some statistical and econometric softwares, assignments, brainstorming sessions, crossover discussion, field survey and presentation.

Assessment Method

There will be at least two continuous assessments which will account for 30% of the evaluation. There will be one final exam. The exam will account for 70% of the total score.

ABM 803 Managerial Economics in Agribusiness 2 Units

Course Description

The course, which combines economic principles and theories in making business decisions, is designed to guide students and managers alike with the skills required to make real-time decisions relating to firm's customers, competitors, and internal operations.

Course Objectives

On completion of this course, students and managers will be able to:

- understand the fundamentals, nature and objectives of managerial economics;
- understand and apply basic principles in managerial economics in business decisions;
- understand theories of demand and supply, and use necessary tools to analyze demand and supply decisions as well as forecasting the demand and supply of agri-food products;
- analyze the different production relationships in agribusiness decisions;
- analyze agribusiness products costs using appropriate tools;
- conduct managerial decision analysis using different approaches;
- understand and apply pricing policies/strategies using different methods; and
- analyze externalities associated with agribusinesses.

Course Content

Fundamentals, nature and objectives of managerial economics; basic principles in managerial economics; theories of demand and supply, factors affecting each and computation methods; theory of production theory and examples of the different production relationships – factor-product relationship, factor-factor relationship, and product-product relationship; managerial decision analysis and approaches; theory of cost; pricing policy and methods; externalities, public goods, and the role of governments.

Mode of Course Delivery

This course will be delivered through lectures, assignments, brainstorming sessions, and presentations.

Assessment Method

There will be at least two continuous assessments which will account for at least 30% of the evaluation. There will be one final exam. The exam will account for 70% of the total score.

ABM 805 Agricultural Marketing and Agribusiness Organization Management 3 Units

Course Description

This course is designed to guide students understand and make informed decisions about agricultural markets and marketing. The course also aims at examining decisions in managing agribusiness organizations and their overall relevance to agricultural commercialization.

Course Objectives

The general objective of this course is to enhance students' knowledge, skill and attitude that support commercialization of agricultural products for the satisfaction of consumers. It is also aimed at equipping students with different skills and approaches of managing agribusiness organizations. After completion of this course, students will be able to:

- explain the concept of marketing, markets, market systems and characteristics;

- analyze agricultural market challenges and approaches, and nexus between food and agricultural industry;
- understand the essence of market liberalization, and analyze government's role in market liberalization and the implications in agribusiness development;
- conduct market research to identify viable agribusiness opportunities;
- conduct market integration analysis;
- analyze market information system;
- explain international trade and analyze the policy instruments;
- understand agribusiness organization management;
- explain the forms of agribusiness organizations and cooperatives;
- analyze organizational behavior and its relevance in human resource management; and
- understand how to mobilize resources for agribusiness organizations and apply budgeting techniques.

Course Content

Concept of marketing, markets, market systems and characteristics; agricultural market challenges and approaches, and nexus between food and agricultural industry; market liberalization; market research; market integration analysis; market information system; international trade and the policy instruments; agribusiness organization management; forms of agribusiness organizations and cooperatives; organizational behaviour; strategic human resource management; agribusiness resource mobilization and budgeting.

Mode of Course Delivery

This course will be delivered through lectures, case studies, assignments, brainstorming sessions, presentation, and demonstration.

Assessment Method

Continuous assessment; this will be based on active participation in discussions of case-based tasks, assignments, presentations, and will account for at least 30% of the evaluation. The remaining goes for final exam.

ABM 811 Food Value Chain Management 2 Units

Course Description

This course is designed to enhance students' skills and knowledge of agricultural value chain analysis and development, enabling environment analysis for agricultural value chain development, as well as governance framework for agribusiness development.

Course Objectives

The aim of the course is to increase the knowledge, capacity and skills of students in agribusiness value chain analysis and development. After completion of this course, students will be able to:

- explain the concepts, principles and relevance of value chain approach
- explain the principles and conditions for upgrading existing value chain;
- understand the steps, linkages and issues in value chain analysis;

- describe the steps, challenges, prospects, interventions/initiatives/strategies for value chain development;
- analyze enabling environment for agribusiness value chain development using appropriate case studies; and
- analyze agribusiness ethics and value chain governance.

Course Content

Concepts, principles and relevance of value chain approach. Principles and conditions for upgrading existing value chain. Steps, linkages and issues in value chain analysis. Steps, challenges, prospects, interventions/initiatives/strategies for value chain development. Enabling environment for agribusiness value chain development and case studies. Ethics and value chain governance.

Mode of Course Delivery

This course will be delivered through lectures, assignments, brainstorming sessions, discussions and group work, presentations, case studies, scenarios, and audio-visuals to support practical learning.

Assessment Method

Continuous Assessment (assignment-scenario analysis, tests, presentations will account for 30% of the evaluation, and the remaining is final exam.

ABM 813 Food Processing Technology 2 Units

Course Description

The course will equip students the knowledge and skills needed to process, preserve, and package foods. It discusses how to process foods, conduct sensory evaluations of different food products, techniques for preserving and packaging foods.

Course Objectives

This is aimed at exposing students to approaches for food processing. At the end of this course, students will be able to:

- explain the concept of raw material processing and food preservation;
- carry out sensory evaluation of new food products;
- describe and apply quality and safety practices in food handling; and
- describe appropriate packaging techniques for different food items.

Course Content

Raw material processing and food preservation: Introduction to science of raw materials; post harvesting physiology; processing of plants and animal-based foods; food preservation techniques. Product development and sensory evaluation: introduction to food product development; types of new food products; stages in new foods product development; sensory evaluation of food products. Food quality and safety; biochemical and nutritional constituents of foods; food microbiology; food toxicology; food additives; functional foods; food quality

management. Food packaging: introduction of food packaging; types and functions of packaging materials; packaging requirements for different foods (environment, spoilage….)

Mode of Course Delivery

This course will be delivered through lectures, practical, assignments, brainstorming sessions, discussions and group work, presentations, case studies, excursions agribusiness enterprises, visits to selected public and private sector offices.

Assessment Method

Continuous Assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 807 Principles of Agripreneurship and Product Development 2 Units

Course Description

This course provides an in-depth understanding of the processes and tools involved in new product development. The course will cover key concepts such as idea generation, concept testing, project planning, and forecasting. This course will also focus on the key concepts of agripreneurship and strategic thinking, exploring the role of agripreneurial behavior and mindset in driving success in agribusinesses. The course will also cover how to generate new business ideas, process of setting up an enterprise, and agripreneurship management. Students will learn about the challenges faced in launching new products and services, and how to effectively overcome them. Students will also learn about the legal aspects of entrepreneurship, developing business plans, and how to apply entrepreneurial and strategic management practices in different organizational settings.

Course Objectives

The objective of this course is to equip students with the knowledge and skills needed to successfully develop and launch new products and services. At the end of the course, students will be able to:

- identify basic qualities of an agripreneur;
- identify and generate business ideas/generation (innovations, emerging enterprises, strategies and approaches of business);
- understand the process of setting up an enterprise (legal, resource requirement e,g personnel, finances, physical etc);
- explain enterprise management (resource mobilization);
- evaluate organizational behaviour-HRM, change management, partner management;
- analyze consumer behavior;
- understand business law-laws and regulations in agri-enterprise;
- develop business plan/business canvas model; and
- carry out business analysis.

Course Content

Introduction to agripreneurship: definition and importance of entrepreneurship; types of entrepreneurship (intrepreneurship, entrepreneurship); forms of agri-enterprises for running agribusiness organizations (small, medium, large); qualities/skills needed for running the

business. How to identify and generate business ideas: sources of new ideas (research, emerging enterprises; ideation process (brainstorming, random association, etc); enterprise selection. Process of setting up an enterprise: legal requirements; financial and economic requirements; personnel requirements; infrastructural requirements; business location. Enterprise Management: financial management; man-power/Personnel- HRM, change management, partner management; machinery/production; materials; resource mobilization in an enterprise. Product development: impetus to product innovation; new product development process. Marketing and consumer behavior: marketing functions; marketing institutions; market research (types of market information); marketing mix; marketing strategies; market segmentation; consumer needs; types of consumers; exogenous and endogenous influences on the buyer behavior; consumer purchasing process. Business law: laws and regulations governing agri-enterprise. Business Plan/Business Canvass model (proposal).

Mode of Course Delivery

The course will be delivered through a combination of lectures, discussions, case studies, and group projects. Guest speakers from industry may be invited to share their experiences and insights on new product development. Students also can work on real-world new product development challenges.

Assessment Method

Students will be assessed through a variety of methods including exams, quizzes, group projects, and presentations. The final assessment may include a comprehensive project where students will have to develop a new product or service concept and present their findings to a panel of experts. Participation in class discussions and activities will also be considered as part of the continuous assessment. Continuous assessment will account for 30% of the evaluation, and the remaining is final exam.

ABM 802 Research Methods in Agribusiness and Value Chain Management 3 Units

Course Description

The course provides students with advanced research techniques in agribusiness management. It employs both quantitative and qualitative research techniques in agribusiness and value chain development. The course will cover areas of research process and methods; research design; sample and sampling; writing good literature reviews; data; data processing and quality control; data analysis; research proposal and research report writing; research paper writing; referencing.

Course Objectives

This course is aimed at improving the knowledge and capacity of students to conduct agribusiness and food value chain management research to generate information that will contribute to solving the problems facing the sector. At the end of this course, learners will be able to:

- understand the kernel of research problem in agribusiness and food value chain management studies;
- write good literature reviews;

- conduct agribusiness and food value chain management researches;
- apply the knowledge and skills gained in collecting and analyzing data generated from both qualitative and quantitative approaches;
- write sound research proposals and research reports;
- present and communicate research findings in appropriate forms;
- use different referencing styles to compile literature cited; and
- write high-quality journal articles.

Course Content

Overview of the research process and methods; agribusiness research design – qualitative and quantitative research designs; sample and sampling; writing good literature reviews; data collection using different techniques and tools/instruments; data processing and quality control; data analysis – qualitative and quantitative analysis; research proposal and research report writing in agribusiness and food value chain management; research paper writing in agribusiness and food value chain management; referencing.

Mode of Course Delivery

The mode of delivery for this course will mainly depend on lectures, presentations, discussions and group work on writing research proposals, and implementing data collection and analysis using qualitative and quantitative approaches.

Assessment Method

Continuous assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 804 Agribusiness and Value Chain Incubation 3 Units

Course Description

This course is designed to provide students with hands-on experience in the agribusiness industry through incubation programs. Students will have the opportunity to work with established agribusinesses, startups, and relevant industry partners to gain practical skills and knowledge in the field of agribusiness and food value chain. Throughout the attachment, students will be encouraged to reflect on their experiences and apply their learning to real-world situations.

Course Objectives

- to provide students with real-world experience in the agribusiness industry through industry attachments;
- to equip students with the skills and knowledge needed to succeed in the agribusiness sector;
- to foster innovation and entrepreneurship in agribusiness through incubation programs; and
- to build connections and networks within the agribusiness industry.

Assessment Method
Students will prepare and present report of the experience gained from industry attachments and incubation programs. This takes 100% of the assessment.

ABM 806 Seminar in Agribusiness and Value Chain Management 2 Units

Course Description
The course will cover special topics related to emerging issues in agribusiness and value chain management in Nigeria and globally.

Course Objectives
The main objective of this course is to expose and test the ability of students to write and make seminar presentations on current agribusiness and value chain management issues. At the end of this course, students will be able to:

- conduct good literature reviews in trends and advances in agribusiness and value chain management using different techniques;
- write and present good-quality research papers using appropriate delivery methods;
- develop and present seminars on current issues in agribusiness and value chain management.

Assessment Method
Preparation and presentation of seminar paper on current issues of agribusiness and value chain to students and lecturers. This takes 100% of the assessment.

ABM 812 Crop, Livestock and Fish Value Chain Management 2 Units

Course Description
This course is designed to address the general principles of crops, livestock and fisheries production and their supply chains; different processing methods of agricultural products; estimating of post-harvest losses in crop products; identify post-harvest and processing facilities for crops, livestock and fisheries products; estimate the viability of different agricultural products processing techniques; monitoring and evaluation of safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products in Nigeria and abroad; understand agrologistics requirements of crops, livestock, and fisheries products; and analyze the enabling environment for crop, livestock and fish value chains management.

Course Objectives
The broad objective of this course is to expose students to knowledge and skills of managing agribusinesses such as crop, livestock, and fish value chains. At the end of this course, students will be able to:

- explain the principles of crops, livestock and fisheries production and their supply chains;
- explain the different processing methods of agricultural products;

- apply the principles of processing to add value to agricultural products;
- describe the different post-harvest changes taking place in crop products, estimate the losses and suggest ways of minimizing the losses;
- analyze losses in livestock and fisheries products as a result of poor processing;
- identify and manage viable post-harvest and processing facilities for crops, livestock and fisheries products;
- assess the economic, social, and environmental viabilities of different agricultural products processing techniques;
- monitor and evaluate safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products in Nigeria and export to other countries;
- understand the agrologistics requirements of crops, livestock, and fisheries products;
- analyze the political, environmental, social, technological, legal, and economic (PESTLE) environments affecting crop, livestock and fisheries value chain management.

Course Content

Principles of crops, livestock and fisheries production and their supply chains. Processing methods of agricultural products. Post-harvest changes taking place in crop products. Estimating the post-harvest losses in crop products. Types of losses in livestock and fisheries products resulting from poor processing and preservations. Post-harvest and processing facilities for crops, livestock and fisheries products. Estimating the viability of different agricultural products processing techniques. Monitoring and evaluation of safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products in Nigeria and abroad. Agrologistics requirements of crops, livestock, and fisheries products. Political, Environmental, Social, Technological, Legal, and Economic (PESTLE) analysis crop, livestock and fisheries value chain management.

Method of Delivery

Lectures, group discussions and presentations, field and company visits.

Assessment Method

Continuous assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 814 Sustainability for Commodity and Food Value Chains 2 Units

Course Description

This course will provide students with the necessary knowledge and skills to critically appraise and evaluate sustainable commodity and food value chains, particularly focusing on agribusiness and food value chain projects. Students will be introduced to the concept of sustainability, tools of cost-benefit analysis of sustainable practices, ethical considerations in food value chain management, and food waste reduction and resource management.

Course Objectives

The primary objective of this course is to equip students with the theoretical and practical understanding of sustainability of food value chains. At the end of the course, students should be able to:

- understand the essence of sustainability in food systems and agribusinesses;
- apply the concept of sustainability in managing food value chains;
- effectively reduce food waste and efficiently manage resources in food value chains;
- understand and apply ethical and social considerations in food production and value chain management;
- conduct cost-benefit analysis of sustainable practices in agribusiness and food value chain projects; and
- use case studies and best practices to describe sustainability of commodity and food value chains in Nigeria and elsewhere.

Course Content

Introduction to Sustainability and Food Systems: definition of sustainability; overview of the food value chain; importance of sustainable food production. Sustainable energy and food value chain: energy consumption in agriculture; greenhouse gas emissions from food systems; production (solar, wind, and biomass energy in agriculture); energy-efficiency (production, processing and transportation). Sustainable Practices in food value chain: groecology; organic farming techniques; water usage and pollution in food production; precision agriculture; smart farming technologies; cold chain management and food preservation; sustainable packaging and distribution systems. Food Waste Reduction and Resource Management: causes and consequences of food waste; strategies for reducing food loss and waste; resource recovery and circular economy approaches. Ethical and Social Considerations in Food Production: fair trade and ethical sourcing; labour rights and social justice in agriculture; environmental standards; cost-benefit analysis of sustainable practices; market incentives for sustainability. Case Studies and Best Practices. Project Work and Presentations

Mode of Course Delivery

This course will be delivered through a combination of lectures, case studies, group discussions, and practical exercises.

Assessment Method

Continuous assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 808 Digital technology for Agri-food System 2 Units

Course Description

To equip students with cutting-edge knowledge and practical skills in applying digital technologies in the agri-food sector, fostering innovation, sustainability, and efficiency in agricultural practices and food systems across Africa. Graduates will be prepared to drive

digital transformation in agriculture, enhance food security, and contribute to economic development while addressing the challenges posed by climate change.

Course Objectives

The primary objective of this course is to equip students with cutting-edge knowledge and practical skills in applying digital technologies in the agri-food sector. By the end of the course, students should be able to:

- understand the role and impact of digital technologies within the agri-food value chain;
- apply data science, remote sensing, and GIS technologies for improving precision agriculture;
- acquire the skills to design, deploy, and manage Internet of Things (IoT) and sensor networks for monitoring soil, climate, and crop conditions, facilitating data-driven decision-making in farming;
- explore the principles of precision agriculture and smart farming technologies, emphasizing digital tools through relevant case studies;
- understand the application and potential of robotics and automation in agriculture, including drones and autonomous vehicles;
- learn the fundamentals of blockchain technology and its applications in enhancing food safety and traceability within the agri-food chain;
- develop strategies for leveraging digital platforms to enhance agricultural extension services and improve digital literacy among farmers;
- analyze the role of digital marketplaces and financial services in agriculture; and
- understand the agri-tech ecosystem, including the development and scaling of innovative solutions, and the policy and regulatory environment supporting agri-tech entrepreneurship.

Course Content

Introduction to Digital Technologies in Agri-food Value Chain Systems: overview of digital technologies in agriculture; digital transformation in agri-food systems: global vs Nigerian context; challenges and opportunities in African agriculture. Data Science and Analytics for Agri-food Value Chain Systems: principles of data science in agri-food value chain systems; remote sensing and GIS for precision agriculture; big data analytics and its application in crop forecasting and pest management. Internet of Things (IoT) and Sensor Technologies in Agri-food Value Chain Systems; introduction to IoT and sensors in farming; design and deployment of sensor networks for soil, climate, and crop monitoring; data management and analysis for informed decision-making. Smart Farming and Precision Agriculture: principles of precision agriculture; digital tools and technologies for site-specific crop management**.** Case studies: Success stories of precision farming in Nigeria. Agricultural Robotics and Automation: overview of robotics in agriculture; drones in crop monitoring and spraying; autonomous tractors and robotic harvesters: Prospects for Nigeria. Blockchain for Traceability in the Agri-Food Chain: introduction to blockchain technology; applications of blockchain for food safety and traceability; case studies on blockchain adoption in Nigerian

agri-food systems. Digital Extension Services and Farmer Digital Literacy: digital platforms for agricultural extension services; strategies for enhancing digital literacy among farmers; role of mobile technologies in reaching remote farmers**.** Digital Platforms for Market Access and Agri-Finance: digital marketplaces for enhancing access to markets for smallholder farmers; opportunities and challenges of digital financial services (DFS) in agriculture: the role of mobile technology in providing agricultural advisory services. Innovation and Entrepreneurship in Agri-Tech: ecosystem for agri-tech startups in Nigeria; funding and scaling agri-tech solutions; policy and regulatory environment for agri-tech innovation. Final Project: A capstone project where students will develop a prototype or detailed plan for a digital technology solution addressing a specific challenge in the Nigerian agri-food sector. This will involve problem identification, technology selection, system design, and an implementation plan, culminating in a presentation to an expert panel.

Mode of Course Delivery

This course combines lectures, hands-on workshops, case studies, field visits, and guest lectures from industry experts. Emphasis will be placed on collaborative learning, with students encouraged to work in teams for projects and assignments. The use of online learning platforms will also be integrated to provide access to resources and facilitate discussions beyond the classroom.

Assessment Method

Continuous assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 821 Financial Management, Strategy and Institutions 2 Units

Course Description

This course will provide students with the necessary knowledge and skills to critically appraise and evaluate financial management institutions and their strategies.

Course Objectives

The intent of this course is to expose the students to financial management issues, budgeting, strategies and institutions.

Course Content

Asset pricing and management, financial and capital structure theories, cost of capital, dividend policy, capital budgeting, mergers and acquisition, financial planning and strategy, sources of finance, leasing venture capital, working capital management and financial performance measurement. The course covers: overview of the financial system, embracing banks, non-bank financial institutions, money and capital markets and the regulatory authorities – the Central Bank, The Securities and Exchange Commission, the Stock Exchange, survey of the structure and operation of the market for short, medium and long term securities as well as the nature, objectives, structure, functions and practices of institutions such as the stock exchange, investment banking, insurance and pension institutions as well as international finance institutions. The other aspects include: economics

and legal aspects of the capital market, analysis of interest rates, cost of capital, prices of securities operations and their implications for investment and performance of the financial operators.

Mode of Course Delivery
This course will be delivered through a combination of lectures, case studies, group discussions, and practical exercises.

Assessment Method
Continuous assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 844 Agribusiness Policy and e-Business 2 Units
Course Description
This course will provide students with an in-depth understanding of agribusiness policy within the context of global economic policy, with a specific focus on the Nigerian agribusiness sector. Additionally, the course will cover e-business principles and strategies to equip students with the necessary knowledge and skills to succeed in the digital economy.

Course Objectives
The primary objective of this course is to equip students with in-depth knowledge of agribusiness policy within the context of Nigeria and global economic policy. By the end of the course, students should be able to:

- analyze and evaluate key agribusiness policy issues in Nigeria and globally;
- understand the impact of global economic policies on the agribusiness sector;
- explore e-business strategies and principles for agribusiness success;
- develop critical thinking and problem-solving skills in relation to agribusiness and e-business.

Course Content
Introduction to agribusiness policy and its importance; global economic policy and its impact on agribusiness; Nigerian agribusiness policy landscape; the African Continental Free Trade Agreement (AfCFTA) and its implications for agribusiness and value chain management; agribusiness development strategies; introduction to e-business and its relevance in agribusiness and value chain management; e-business management strategies for agribusiness and value chain management; distribution channels in e-business; privacy and security issues in e-business; cyber-laws and regulations in e-business

Mode of Course Delivery
The course will be delivered through a combination of lectures, case studies, group discussions, and hands-on practical exercises. Online resources and platforms will also be utilized for better engagement and interaction.

Assessment Method

Continuous assessment (assignment, tests, presentations etc) will account for 30% of the evaluation, and the remaining is final exam.

ABM 880 Master's Dissertation 6 Units

This is the dissertation, which will be used to assess the ability of the students to conduct good-quality researches/studies in agribusiness and food value chain management. Master's dissertations will be supervised by senior academics. The supervisor will be assigned by the Postgraduate School with the assistance of the Department. A template for writing dissertation will be developed and used by students.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA (FUTMINNA)

SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY (SAAT)

DEPARTMENT OF AGRICULTURAL ECONOMICS & FARM MANAGEMENT

PROPOSED CURRICULUM

FOR

GRADUATE PROGRAMME IN MASTER OF TECHNOLOGY (M.TECH.) DEGREE IN FOOD VALUE CHAIN MANAGEMENT

Table of Contents

1.0 Introduction

The quest for agricultural transformation, economic growth, and poverty reduction has been the policy thrust by successive governments in Nigeria. The quest for the reduction of widespread hunger and unemployment has led to the promotion and creation of agribusinesses and linkages to small and medium enterprises across the agricultural commodity value chains. Value chain analysis identifies opportunities in the chain that will enhance its performance and returns to its participants. High-value chains in agriculture can contribute to food security in the dimensions of access, availability, and quality of food primarily by the increase of production volumes, farm diversification, generating higher incomes, reducing postharvest losses, and upgrading technologies to use more efficiently the existing resources.

In the recent past, increasing agricultural production and productivity at the farm level has been the focus. However, there is a change in focus from production to value-addition activities, because the lack of value-adding activities along agricultural production and marketing processes has not brought significant change in the livelihoods of actors operating at the level of production alone. Studies have shown that other actors and not producers seem to realize more profit. More so, the modern competitive global business environment necessitates the commercialization of the country's agriculture. Consequently, the need for the respective government and non-government organizations to contribute their quota towards the improvement of farmers' welfare, and livelihoods and facilitating the maximization of benefits from their activities have become necessary in evolving global and local market economies. The development of agro-industries with an emphasis on promoting effective agro-value chains as a means of further expansion of the leading role played by agriculture has taken center stage.

Consumer demand for commodities is predicated on the utility they confer on them. Adding value to agricultural commodities along the chain has the propensity to meet the ever-changing interests of consumers. Agribusiness enterprises should pay attention to consumer satisfaction by adding value to their goods and services along the market chains. Value addition and consideration of consumers' demands could be achieved through flourishing agribusiness enterprises that start the business from the assessment of consumers' needs and the transformation of production resources and processes. Value chains are market-oriented because they focus on what consumers value and a deeper analysis could reveal inconsistencies in the chain and provide a framework for resolving them.

Owing to the dynamic nature of human population growth, matching supply to consumer demand is very crucial. This can be achieved through a value chain approach. Value chains create a complex system of markets characterized by a series of linkages from input suppliers, enabling a framework for the final consumers. They also provide a means of addressing the complex and dynamic

relationships between businesses, strategies for increasing efficiency, and ways of enabling businesses to increase their productivity through added value. Entrepreneurs should strive to add value at each stage of their operations. To be able to do this requires a well-trained manpower capable of managing diverse and multidimensional functions inherent in agribusiness and value chain linkages in the system.

Aligning agricultural value chains with state, regional, and global principles, is contingent on the attainment of the goals of sustainable development, economic growth, and global cooperation in addressing challenges related to food security, environmental conservation, and social equity of the nation. This alignment enhances the resilience and competitiveness of agricultural value chains in an increasingly interconnected world. The alignment of the Master's Degree Program in Food Value Chain Management with Nigeria's sector goals, Comprehensive African Agricultural Development Programme (CAADP) principles which the Federal Government of Nigeria (FGN) has renewed its commitment to and the realization of the Sustainable Development Goals (SDGs) is necessary given the need for policy congruence with national and regional priorities, with obvious benefits for national integration and investment priorities.

Given this, the need for such competent graduates necessitated the inclusion of a Master of Technology (M.Tech.) Degree Programme in Food Value Chain Management in the CHAIN Project as a regular programme. The country needs more skilled and informed graduates with higher analytical and problem-solving capacities who will not be job seekers but employers of labour.

The programme curriculum is designed to produce proficient, highly skilled, and innovative agribusiness and value chain experts capable of leading the quest for commercialization of the country's agriculture in light of the dynamic nature of consumer demand.

2.0 Philosophy

The philosophy of the M. Tech. Degree in Food Value Chain Management is hinged on the belief that effective management of the food value chain is essential for ensuring the sustainability, resilience, and equitable distribution of food resources globally and the programme embraces a holistic approach that integrates knowledge from diverse disciplines, to foster collaboration and innovation, and promote responsible leadership to address the complex challenges facing the food industry and society.

3.0 Vision

The Programme seeks to produce globally recognized leaders in education and research excellence, who will shape the future of the food industry through innovative, sustainable, and socially responsible value chain management practices.

4.0 Mission

To equip students with the knowledge, skills, and mindset needed to lead and innovate within the dynamic and complex global food system, while promoting sustainability, resilience, and social responsibility.

5.0 Aim and Objectives

The aim of the Master of Technology in Food Value Chain Management Programme is to prepare graduates to be effective leaders, problem solvers, and innovators who can drive positive change and contribute to the sustainability, resilience, and inclusivity of food systems globally. The objectives are to:

(i) Provide students with a comprehensive understanding of the entire food value chain, including primary production, processing, distribution, retailing, and consumption,

(ii) Enhance students' research and analytical skills in assessing and evaluating key aspects of the food value chain, including market dynamics, supply chain efficiencies, sustainability practices, and regulatory requirements.

(iii) Develop students' leadership and management capabilities, including teamwork, communication, problem-solving, and decision-making skills, necessary for effective leadership roles in the food industry.

(iv) Instill an understanding of the importance of sustainability, social responsibility, and ethical practices in food value chain management, and to equip students with strategies for integrating these principles into business operations.

(v) Offer opportunities for practical experience, industry internships, and hands-on projects that allow students to apply theoretical knowledge in real-world settings and develop practical skills relevant to food value chain management.

(vi) Provide networking opportunities, mentorship, and career development support to students, enabling them to build professional relationships, access industry resources, and advance their careers in food value chain management.

(vii) Foster a global perspective in students by exploring international markets, trade dynamics, cultural differences, and regulatory frameworks relevant to food value chain management.

6.0 Admission Requirements

Candidates seeking admission into the M. Tech. Food Value Chain Management programme must have the following qualifications from recognized institutions:

i. Bachelor's Degree in Agriculture, Crop Production, Animal Production, Food Science and Technology, Agricultural Economics, Agricultural Extension, Fishery Technology, Agricultural Engineering, Veterinary Medicine, or Economics, with a minimum of 2nd Class Lower division or Higher National Diploma (HND) in Agricultural Economics or Agricultural Extension and Management, Crop Science, Animal Production, Food Science and Technology, Agricultural Engineering, or Animal Health and Husbandry with a minimum of Upper Credit from a recognized institution and a Postgraduate Diploma(PGD) in Agriculture related course at Distinction level;

ii. O'Level credit passes in English Language, Mathematics, Chemistry, Biology/Agricultural science, and credit pass any of Geography or Economics with at least a pass in Physics.

iii. Candidates with a PGD from a recognized university with a minimum of Lower Credit (Cumulative Grade Point Average (CGPA) of 2.50) in relevant fields may be considered. A qualifying examination may also be necessary for this category of candidates.

iv. Candidates with a PASS grade in first degree, are NOT qualified for admission.

7.0 Duration of the Programme

The M. Tech. Food Value Chain Management Programme will be by both course work and research. It will run on a full-time basis. The duration of the Programme is as follows:

- Minimum of 3 semesters (18 months), and
- Maximum of 6 semesters (Three academic sessions).

A minimum of two semesters will be required for coursework. Upon completion of coursework, a student shall not proceed to the thesis writing stage unless he/she has obtained a minimum cumulative grade point average (CGPA) of 2.50.

A student must record a minimum of 75% attendance in the course lectures to qualify for the final examination on the course. Meeting this requirement will be based on the Course Lecturer's attendance record.

Results of examinations must be presented to the Postgraduate School Board at the end of each semester for consideration and recommendation. The results will eventually be presented to the University Senate for approval.

8.0 Examination Offences and Penalties

The following offenses which are directly related to the conduct of postgraduate examinations will attract the penalty of expulsion from the University:

(i) Forging of any document relevant to the examination e.g. student I.D. card, School fees payment receipts, etc.;
(ii) Smuggling in and out of the examination hall blank answer booklet or continuation sheet;
(iii) Involvement in an examination leakage;
(iv) Possession of any extraneous or foreign material inside the examination hall; and
(v) Failure to sign in and out of the examination may lead to the cancellation of the candidate's examination.

9.0 Graduation Requirements

Candidates are required to earn a minimum of 35 credit units before graduation. These shall consist of 27 units of core courses, 6 units of thesis, and 2 units of elective courses.

A student shall not be permitted to defend his/her thesis unless he/she has satisfied the coursework requirements and he/she is financially up to date. The School Postgraduate Committee shall submit the recommended results of their students to the Postgraduate School Board which shall consider the overall results of each student before recommending it to Senate for approval.

At least one conference paper must have been presented from the thesis before the external examination can take place. However, in the case of patent rights, candidates should present an application for registration instead of a conference paper.

The University Senate shall be the body to grant final approval of all Master's degree results of candidates for the award of M.Tech. degree in Food Value Chain Management. No candidate shall be recognized as having completed his/her course until the Senate approves it.

10.0 Academic Probation

A student shall be allowed to repeat registered but failed courses at the next available opportunity provided that the student maintains a minimum CGPA of 2.50. The student shall be allowed to remedy any failed course (s) once. Any failure thereafter will result in the withdrawal of the student from the programme.

11.0 Deferment of Admission

All cases of deferment of admission must be processed, considered and decided before the session's

matriculation ceremony. No case of deferment of admission request shall be considered after the matriculation ceremony.

12.0 Thesis

Students will be expected to present at least two seminars before the final defense examination. The thesis writing shall include the following activities:

i. Appointment of supervisor (s);
ii. Conduct at least two seminars, which include the proposal and exit seminars respectively;
iii. Appointment of internal examiner; and the
iv. Appointment of the external examiner.

An oral examination will be conducted for each candidate by an External Examiner; at least one Internal Examiner and the Head of the Department who serves as the Chief Examiner where he/she is not a supervisor. The appointment of such examiners shall be on the recommendation of the School Postgraduate Committee approved by the Postgraduate School Board and presented to the university Senate for approval.

13.0 Appointment of Supervisors

Two supervisors will be appointed for each Master's degree candidate whose appointment shall be approved by the Postgraduate School Board. The selection of Supervisors would be on the advice of the student's Head of Department through the School Postgraduate Committee. The selection will take cognizance of the subject area of the Supervisors.

In a situation where the student's research will cut across the usual boundaries between academic disciplines, a Co-Supervisor may be selected from other departments.

For the purpose of remuneration, the payment in respect of each Master Candidate shall be at the rate approved by Council/Senate from time to time.

Only PhD holders with a minimum of two years shall be allowed to supervise Master's students.

14.0 Appointment of External Examiner for Oral Examination

Professors will be engaged as external examiners. However, a waiver may be granted to engage lecturers not below the rank of senior lecturer where it is difficult to get Professors.

The appointment of external examiners (Main and Alternate) shall be based on the recommendation of each School Postgraduate Committee to the Postgraduate School Board for approval. The Senate shall be notified accordingly.
The Head of Department will serve as the Chief Examiner in the oral defense examinations.

15.0 Grading for the Master's degree programme

Grading for the Master's degree programme shall be as follows:

A	-	70% and above
B	-	60% - 69%
C	-	50% - 59%
D	-	45% - 49%
E	-	40% - 44%
F	-	0% - 39%.

The grading system for the Master's Degree Programme shall be free fall. The pass mark for all coursework examinations is 40%. Any score lower than this shall be recorded as Failure and the course must be re-taken/repeated at the next available opportunity.

16.0 Course Profile

The course profile for the programme is presented as follows:

16.1. Course Coding

The course offered in the programme will have the code 'FVC' followed by a three-digit figure starting with 8, e.g. 800. The first digit represents the level of study, the second digit represents the semester in which the course is offered, (odd numbers represent the first semester and even numbers represent the second semester) and the last digit represents the course category/sequence.

17.2 Course Structure

Year 1:

First Semester

S/N	Course Code	Course Title	Credit	Semester	Core/Elective
1.	FVC 811	Research Methods and Statistics in Agribusiness Value Chain	2	I	Core
2.	FVC 812*	Food Value Chain Management	2	I	Core
3.	FVC 813	Agricultural Marketing and International trade	2	I	Core
4.	FVC 814*	Principles of Agripreneurship and Product Development	2	I	Core
5.	FVC 815	Gender in Value Chain Management	2	I	Core
6.	FVC 816	Quantitative Techniques in Agribusiness	2	I	Core
7.	FVC 817*	Food Processing Technology	2	I	Core
8.	FVC 818	Managerial Economics in Agribusiness	I	I	Elective

9.	FVC 819	Diffusion of Innovation	1	1	Elective
		Sub total	**15**		

**** Implies common course to be adopted by partner universities***

Minimum Core Required = 14 units
Minimum Elective Required = 1 unit
Minimum Total = 15 units

Year 1:

Second Semester

S/N	Course Code	Course Title	Credit	Semester	Core/Elective
1.	FVC 820	Graduate Scientific Writing and Seminar Presentation	1	2	Core
2.	FVC 821	Crop, Livestock, and Fish Value Chain Management	2	2	Core
3.	FVC 822	Investment Analysis and Business Plan Development	2	2	Core
4.	FVC 823	Agribusiness Financial and Risk Management	2	2	Core
5.	FVC 824	Business Law	2	2	Core
7.	FVC 825	Digital Technology for Food Systems	2	2	Core
8.	FVC 826	Sustainability of Commodity and Food Value Chain	2	2	Core
9.	FVC 827	Livestock Animal Production	1	2	Elective
10.	FVC 828	Horticultural and Ornamental Crop Production	1	2	Elective
		Sub total	**14**		

**** Implies common course to be adopted by partner universities***

Minimum Core Required = 13 units
Minimum Elective Required = 1 unit
Minimum Total = 15 units

Year 2:

S/N	Course Code	Course Title	Credit	Core/Elective
1.	FVC 700	M. Tech. Thesis Research	**6**	Core

Summary

Total Minimum Core Required = 14 + 13 + 6 = 33 units
Minimum Electives Required = 2 units

Total Min. required for graduation = **35 units.**

18.0 Course Descriptions

First Semester

1) FVC 811: Research Methods and Statistics in Agribusiness Value Chain (2 Credit units)

Course Description:

The course is designed for graduates to gain clear insights into the methods of acquiring knowledge, types and systematic process of research, defining the research problem, developing the research proposal and sampling design. They will also learn the methods of data collection and sources, data processing, statistical analysis techniques and interpretation, research report writing and presentation. Graduates will also gain full understanding of how research proposal is developed and how to write research project related to food value chain management.

Course Objectives:
Upon completion of this course, students will be able to:

1. Discuss issues related to research ethics, responsible conduct of human and animal research, and data collection, as well as recognize how to avoid plagiarism.
2. Utilize effective techniques for conducting a literature search using online databases and managing references.
3. Critique research articles and determine the quality of publications, identifying issues related to methodology and guidelines to improve scientific rigor and reproducibility.
4. Identify and apply the steps involved in the scientific method by formulating a research question, building effective scientific aims, generating a research hypothesis, and designing an experimental plan (study) to address the question.
5. Generate and store data in an effective format and then select and perform appropriate statistical calculations to analyze data.
6. Interpret visual representations of data (i.e. tables, graphs).
7. Utilize scientific principles and inductive reasoning to translate and interpret results.
8. Present aspects of the scientific method, including experimental design and results, in an accurate and professional manner.
9. Outline the processes related to manuscript reviews, writing, authorship, and journal impact factors.
10. Demonstrate a clearer understanding of possible careers and how acquired skills and interests match up to a given career path

Course Content

Statistical data and their presentation. Descriptive statistics - Measures of central tendency and

dispersion. Probability and probability distributions. Discrete and continuous random variables. Hypothesis testing. Science and the scientific method. Steps involved in scientific investigation. Sampling theory, sampling techniques. Levels of measurement. Alternative sources of data. Design of data collection instruments - questionnaires, interview schedules, etc. Participatory appraisal techniques. Data analysis - Descriptive and inferential statistics. Special problems of data collection and analysis in Nigeria.

Mode of Course Delivery

This course will be delivered through lectures, training on use of some statistical software, assignments, brainstorming sessions, crossover discussion, field survey and presentation.

Assessment Methods:
The assessment will be by continuous assessment and written examination.

Continuous Assessment: There will be at least two continuous assessment which will account for 40% of the evaluation.

Final Exam: There will be one final exam. The exam covers material from class and the text as well as any readings by the students. The exam will generally consist of a few brief essay questions and a few problems to be solved. The exam will account for 60% of the total score.

2) FVC 812 Food Value Chain Management (2 Units)

Course Description

This course is designed to provide students with advanced knowledge, skills, and competencies in managing the entire spectrum of activities involved in the production, processing, distribution, and marketing of food products. The course typically covers a range of topics related to agricultural economics, supply chain management, sustainability, food safety, marketing, and policy.

Course Objectives
The aim of the course is to increase the knowledge, capacity and skills of students in agribusiness value chain analysis and development. After completion of this course, students will be able to:

- Explain the concepts, principles and relevance of value chain approach
- Explain the principles and conditions for upgrading existing value chain;
- Understand the steps, linkages and issues in value chain analysis;
- Describe the steps, challenges, prospects, interventions/initiatives/strategies for value chain development;

- Analyze enabling environment for agribusiness value chain development using appropriate case studies; and
- Analyze agribusiness ethics and value chain governance.

Course Content

Concepts, principles and relevance of value chain approach. Principles and conditions for upgrading existing value chain. Steps, linkages and issues in value chain analysis. Steps, challenges, prospects, interventions/initiatives/strategies for value chain development. Enabling environment for agribusiness value chain development and case studies. Ethics and value chain governance.

Mode of Course Delivery

This course will be delivered through lectures, assignments, brainstorming sessions, discussions and group work, presentations, case studies, scenarios, and audio-visuals to support practical learning.

Assessment Method

Continuous Assessment (assignment-scenario analysis, tests, presentations will account for 30% of the evaluation, and the remaining is final exam.

3) FVC 813 Agricultural Marketing and International Trade (2 Units)

Course Description

Definition and concepts of market, marketing, buyer and seller market, agricultural marketing, business philosophies, market channels, market information system, challenges in agricultural marketing, link between agriculture and food industry, building concepts of market oriented business specialization of agriculture, market liberalization, market research, analyzing market integration, and role of gender in agricultural marketing. Students will be equipped with classical and neoclassical theories underlying international trade, international trade policy instruments, and emerging issues in trade, factor mobility, and the general equilibrium models; cross border trade and implications, and regional integration and globalization.

Course Objective

The general objective of this course is to equip students with knowledge, skill and attitude that enable them to support the efforts to produce market oriented agricultural goods for sustainable profit and consumer satisfaction; it is also provide students with the concepts of international trade giving emphasis on classical and neoclassical theories as well as theoretical and analytical tools used in analyzing international trade.

The specific objectives:

After completion of this course, students will be able to:

- Assess challenges in agricultural product marketing and its linkage with food industry
- Identify profit share of market participants through analysis of marketing costs and margins under different channels
- Identify agricultural business opportunities
- Analyze consumers in agricultural markets
- Explain fundamental concepts underlying international trade;
- Explain the factors that make international trade to be an important policy agenda;
- Analyze agricultural trade policy problems;
- Provide arguments for and against protectionist policies with the motives, types and institutional set-up of economic integration; and
- Compare and contrast the applications of different trade theories in Ethiopian context.

Course Content

Definition and Concepts of Market and Marketing, Market Features and Characteristics of Different Market (Buyer and Seller), Economic Role of Price Under Different Market Systems (Market Based, Mixed and Command Economy); Agricultural Market Business Philosophies, Challenges and Approaches; Market Liberalization; Market Research; Analyzing Market Integration; Market Information System; The Theoretical Concepts Underlying International Trade; International Trade Policy Instruments; International Trade and Developing Economy; Emerging Issues in Value Chain and Agricultural Trade.

Mode of Course Delivery

This course will be delivered through lectures, case studies, assignments, brainstorming sessions, crossover discussion, projects, presentation, and demonstration.

Assessment Methods

Continuous assessment; this will be based on active participation in discussions of case based tasks, assignments, presentations, and will account for at least 40% of the evaluation. The remaining goes for final exam.

4) FVC 814 Principles of Agripreneurship and Product Development (2 Units)

Course Description

This course provides an in-depth understanding of the processes and tools involved in new product development. The course will cover key concepts such as idea generation, concept testing, project planning, and forecasting. This course will also focus on the key concepts of agripreneurship and strategic thinking, exploring the role of agripreneurial behavior and mindset in driving success in

agribusinesses. The course will also cover how to generate new business ideas, process of setting up an enterprise, and agripreneurship management. Students will learn about the challenges faced in launching new products and services, and how to effectively overcome them. Students will also learn about the legal aspects of entrepreneurship, developing business plans, and how to apply entrepreneurial and strategic management practices in different organizational settings.

Course Objectives

The objective of this course is to equip students with the knowledge and skills needed to successfully develop and launch new products and services. At the end of the course, students will be able to:

- Identify basic qualities of an agripreneur;
- Identify and generate business ideas/generation (innovations, emerging enterprises, strategies and approaches of business);
- Understand the process of setting up an enterprise (legal, resource requirement e.g. personnel, finances, physical etc.);
- Explain enterprise management (resource mobilization);
- Evaluate organizational behaviour-HRM, change management, partner management;
- Analyze consumer behavior;
- Understand business law-laws and regulations in agri-enterprise;
- Develop business plan/business canvas model; and
- Carry out business analysis.

Course Content

Introduction to agripreneurship: definition and importance of entrepreneurship; types of entrepreneurship; forms of agri-enterprises for running agribusiness organizations (small, medium, large); qualities/skills needed for running the business. How to identify and generate business ideas: sources of new ideas (research, emerging enterprises; ideation process (brain storming, random association, etc.); enterprise selection. Process of setting up an enterprise: legal requirements; financial and economic requirements; personnel requirements; infrastructural requirements; business location. Enterprise Management: financial management; man-power/Personnel- HRM, change management, partner management; machinery/production; materials; resource mobilization in an enterprise. Product development: impetus to product innovation; new product development process. Marketing and consumer behavior: marketing functions; marketing institutions; market research (types of market information); marketing mix; marketing strategies; market segmentation; consumer needs; types of consumers; exogenous and endogenous influences on the buyer behavior; consumer purchasing process. Business law: laws and regulations governing agri-enterprise. Business Plan/Business Canvass model (proposal)

Mode of Course Delivery

The course will be delivered through a combination of lectures, discussions, case studies, and group projects. Guest speakers from industry may be invited to share their experiences and insights on new product development. Students will also have the opportunity to work on real-world new product development challenges.

Assessment Method

Students will be assessed through a variety of methods including exams, quizzes, group projects, and presentations. The final assessment may include a comprehensive project where students will have to develop a new product or service concept and present their findings to a panel of experts. Participation in class discussions and activities will also be taken into account as part of the continuous assessment. Continuous assessment will account for 30% of the evaluation, and the remaining is final exam.

5) FVC 815 Gender in Value Chain Management (Credit Hours: 2)

Course Description

The course equips learners with concepts of gender in relation to value chain management. It advocates for gender sensitive value chain development and provides input on how to make value chain interventions promote women's empowerment, gender equity for improving chain performance. The course also discusses how development organizations and private entrepreneurs could find ways to improve the position of women in value chains - especially small-scale women farmers and primary processors.

Course Objectives

At the end of this course, students will be able to:

- Explore the concept of gender in line with value chain management
- Analyze gender roles and gender equity in value chain management
- Explain gender analysis frameworks/tools
- Mainstream gender in value chain development
- Explain policy concerns in relation to gender dimension

Course Content

The Concept of Gender; Poverty and Gender Inequality in Agriculture; Gender Division of Labour; Practical and Strategic Gender Needs; Facilitating Gender Equitable Value Chain Development; Gender Analysis Framework / Tools; Gender mainstreaming in value chain management; Policy Issues Related with Gender.

Mode of Course Delivery

Interactive lecture, reading assignment, presentation, educational excursions to women owned small scale enterprises, government and non-government offices working in the area of gender and development issue.

Assessment Methods

Continuous assessment methods (assignments students analyze for a firm/ company the current gender situation and write report of their findings, their personal opinion on gender policy and purposes in general, their recommendation for this firm based on their findings and opinion, group discussion/work,

quiz, test) which accounts for at least 40% of the evaluation and the remaining will be final exam.

6) FVC 816 Quantitative Techniques in Agribusiness (Credit Hours: 2)

Course Description

This course deals with various quantitative techniques which are applicable in economic and managerial decision problems. It specifically deals with various programming tools like linear programming, integer programming, non-linear programming; network models; transportation models; queuing theories; inventory control models; brief definitions of important statistical terms such as random variables, probability density function and normal distribution; regression analysis; common problems encountered during regression analysis (specification errors, Heteroskedasticity, Autocorrelation, endogeneity and Multicollinearity) along with potential solutions to these problems. It also provides students with basic understanding of simultaneous equation models. The course will expose students to computer-based software which are useful in analyzing various tools and models. Moreover, this course is designed to provide the necessary foundations and skills to conduct empirical research in Agribusiness and Value Chain Management.

Course Objectives

The general objective of this course is to enhance graduates' analytical, computational and problem solving skills through application of quantitative technique in the area of Agribusiness and Value Chain Management.

Specific Objectives

After completing this course, students will be able to:

- Apply important analytic methods in decision-making, recognize their assumptions and limitations.
- Analyze decision problems employing formal models.
- Formulate econometric models in an empirically testable form
- Estimate and test econometric relationships with observed data
- Apply econometric tools for prediction and policy decisions
- Analyze and interpret quantitative socioeconomic data
- Assess cause and effect relationship of socioeconomics variables.

Course Content

Introduction to Quantitative Techniques; Linear Programming (Graphical and Simplex Methods); Integer Programming and Goal Programming; Non-Linear Programming; Transportation Models and Solution Algorithm; Waiting Lines and Queuing Theory; Inventory Control Models; Introduction to

Statistical Concepts; Multiple Linear Regression Models and OLS Estimators - OLS Procedure, Estimators, Parameters and Interpretation, Prediction, Interval Estimation and Hypothesis Testing; Non-Linear Regression Models, (Probit, Logit, Tobit, Heckman Two Stage Procedure, Cragg's Double Hurdle Models); Econometric Problems (Heteroskedasticity, Autocorrelation, Multicollinearity, Specification Error, Endogeneity); Simultaneous Equation Models; Econometric Analysis of Time Series Data (Stationary And Non-Stationary).

Mode of Course Delivery

The course will be delivered through lectures, case studies, assignments, brainstorming sessions, presentation, computer based exercises and term paper.

Specific Resources:

- Computer lab for statistical software usage
- Manual for statistical soft-wares like STATA, SPSS, etc.
- Data for practical exercises.

Assessment Method

Continuous assessment: this will be based on active participation in discussion of case-based tasks, assignments, presentations, and will account for at least 40% of the evaluation. The remaining goes for final exam.

7) FVC 817 Food Processing Technology (2 Units)

Course Description

The course will equip students the knowledge and skills needed to process, preserve, and package foods. It discusses how to process foods, conduct sensory evaluations of different food products, techniques for preserving and packaging foods.

Course Objectives

This is aimed at exposing students to approaches for food processing. At the end of this course, students will be able to:

- Explain the concept of raw material processing and food preservation;
- Carry out sensory evaluation of new food products;
- Describe and apply quality and safety practices in food handling; and
- Describe appropriate packaging techniques for different food items.

Course Content

Raw material processing and food preservation: Introduction to science of raw materials; post harvest physiology; processing of plants and animal-based foods; food preservation techniques. Product development and sensory evaluation: introduction to food product development; types of new food

products; sensory evaluation of food products. Food quality and safety; biochemical and nutritional constituents of foods; food microbiology; food toxicology; food additives; functional foods; food quality management. Food packaging: introduction of food packaging; types and functions of packaging materials; packaging requirements for different foods (environment, spoilage….)

Mode of Course Delivery

This course will be delivered through lectures, practical, assignments, brainstorming sessions, discussions and group work, presentations, case studies, excursions agribusiness enterprises, visits to selected public and private sector offices.

Assessment Method

Continuous Assessment (assignment, tests, presentations etc.) will account for 30% of the evaluation, and the remaining is final exam.

8) FVC 818 Managerial Economics in Agribusiness (1 Unit) (Elective)

Course Objectives

The general objective of this course is to provide students with a basic methods and principles of economic analysis and analytical tools that can be used in managerial decision making processes within various organizational settings such as business firms, not-for-profit organizations and government agencies. It enables students to identify problems and opportunities, examine alternative courses of actions, and make optimal choices. After completing this course, students will be able to:

- Apply economic theory and methods to business and administrative decision making;
- Explain how prices get determined in markets, how market participants benefit in the form of consumer surplus and producer surplus, and what are the consequences of government intervention;
- Measure the responsiveness (Elasticities) of consumers' demand to changes in the different determinants of demand and the importance of these elasticities in decision making;
- Explain the different costs of production and how they affect short run and long run decisions, describe economies and diseconomies of scale, and discuss break even analysis;
- Apply how game theory can be used in explaining business decisions;
- Explain what an externality is and the measures to be taken in order to internalize externalities.

Course Content

The Fundamentals of Managerial Economics; Definition of Economics and Managerial Economics, Firms and Managerial Objectives, Managerial Tools of Economic Analysis, Principles of Managerial Economics, The Fundamentals of Managerial Economics; Applications of Demand and Supply Theories; Production and Costs in Managerial Decision Making; Market Structures; Price and Pricing Strategies; Externalities, public goods, and the role of Governments.

Assessment Methods:

Continuous Assessment: There will be at least two continuous assessment which will account for at least 40% of the evaluation.

Final Exam: There will be one final exam. The exam covers material from class and the text as well as any readings by the students. The exam will generally consist of a few brief essay questions and a few problems to be solved. The exam will account for 60% of the total score.

9) FVC 819 Diffusion of Innovation (1 Unit) (Elective)

Course Description

Diffusion of innovation is a special type of communication, in that the messages are concerned with new ideas which will accord the student the knowledge of how to transfer innovation to a place where such does not exist. More so, theory of diffusion helps student to understand how innovations are diffused in a social system. It has therefore become imperative for all stakeholders in the agricultural sector to understand how innovation flows from one social system to another, thereby transforming agriculture through agricultural extension in the country. The course will also expose students to the basic elements of innovation diffusion in order to improve productivity and standard of living.

Course objectives:

At the end of this course, students will be able to: Explain the concepts of the diffusion process;

- Discuss the elements of diffusion of innovation;
- Assess the basic knowledge of innovation diffusion in rural communities;
- Identify the various adopter categories and stages of adoption;
- Acquaint learners with the concepts of innovativeness;

- Discuss diffusion and adoption of agricultural innovation; and
- Distinguish between the various theories of diffusion as applied to agricultural extension.

Course content

Concept of diffusion process. Elements of diffusion of innovation. Diffusion of an innovation in a community. Adopter categories. Innovativeness of innovation. Stages of innovation adoption. Diffusion process and communication/Channels of diffusion. Diffusion process and the social system. Characteristics of innovation. Role of local leaders in diffusion process. Theories of diffusion. Critiques of the diffusion theories. Roles of Community Based Organizations in diffusion process. Diffusion and adoption of agricultural innovation. Adoption process. Acceptance - rejection of innovation diffusion. Factors influencing adoption of innovation. Innovation – Decision types.

Mode of Course Delivery

The course will be delivered through lectures, case study, assignments, brainstorming sessions, discussion, term paper and presentation.

Assessment Methods

There will be at least two continuous assessments which will account for 40% of the evaluation while the remaining 60% goes for final exam.

Second Semester

1) FVC 820 Graduate Scientific Writing and Seminar Presentation (1 Unit)

Course Description

The course is expected to cover topics related to current issues and advances in agribusiness and value chain management such as policies, technologies, economic, social and environmental feasibilities as well as challenges and opportunities at national and international levels.

Course Objectives

At the end of this course, students will be able to:

- Review and critically analyze scientific articles and papers related to advances in Agribusiness and value chain management
- Present scientific papers and with appropriate delivery methods using visual aids such as overheads, slides, posters and other computer generated techniques

- Prepare seminar paper on current issues of Agribusiness and value chain.

Assessment Methods

Preparation and presentation of seminar paper on current issues of agribusiness and value chain where different stakeholders available; and it accounts 100% of the evaluation.

2) **FVC 821 Crop, Livestock and Fish Value Chain Management (2 Units)**

Course Description

This course is designed to address the general principles of crops, livestock and fisheries production and their supply chains; different processing methods of agricultural products; estimating of post-harvest losses in crop products; identify post-harvest and processing facilities for crops, livestock and fisheries products; estimate the viability of different agricultural products processing techniques; monitoring and evaluation of safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products in Nigeria and abroad; understand agro logistics requirements of crops, livestock, and fisheries products; and analyze the enabling environment for crop, livestock and fish value chains management.

Course Objectives

The broad objective of this course is to expose students to knowledge and skills of managing agribusinesses such as crop, livestock, and fish value chains. At the end of this course, students will be able to:

i) Explain the principles of crops, livestock and fisheries production and their supply chains;

ii) Explain the different processing methods of agricultural products;

iii) Apply the principles of processing to add value to agricultural products;

iv) Describe the different post-harvest changes taking place in crop products, estimate the losses and suggest ways of minimizing the losses;

v) Analyze losses in livestock and fisheries products as a result of poor processing;

vi) Identify and manage viable post-harvest and processing facilities for crops, livestock and fisheries products;

vii) Assess the economic, social, and environmental viabilities of different agricultural products processing techniques;

viii) Monitor and evaluate safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products in Nigeria and export to other countries;

ix) Understand the agro-logistics requirements of crops, livestock, and fisheries products; and

x) Analyze the political, environmental, social, technological, legal, and economic (PESTLE) environments affecting crop, livestock and fisheries value chain management.

Course Content

Principles of crops, livestock and fisheries production and their supply chains. Processing methods of agricultural products. Post-harvest changes taking place in crop products. Estimating the post-harvest losses in crop products. Types of losses in livestock and fisheries products resulting from poor processing and preservations. Post-harvest and processing facilities for crops, livestock and fisheries products. Estimating the viability of different agricultural products processing techniques. Monitoring and evaluation of safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products in Nigeria and abroad. Agro logistics requirements of crops, livestock, and fisheries products. Political, Environmental, Social, Technological, Legal, and Economic (PESTLE) analysis crop, livestock and fisheries value chain management.

Method of Delivery
Lectures, group discussions and presentations, field and company visits.

Assessment Method
Continuous assessment (assignment, tests, presentations etc.) will account for 30% of the evaluation, and the remaining is final exam.

3) FVC 822 Investment Analysis and Business Plan Development (2 Units)

Course Description:
The course is aimed at equipping learners with the knowledge and skills that help to analyze investment in agribusiness and develop business plan. The detail description of this course is introduction to Investment analysis; Investment environment; Investment feasibility and Business plan development.

Course Objectives
At the end of this course, learners will be able to:

- Explain role and scope of investment,
- Identify investment opportunities,
- Analyze investment environment,
- Evaluate investment feasibilities, and
- Develop business plan.

Course Content
Introduction to Investment Analysis; The Role and Scope of Investment; Investment Opportunities; Investment Environment; Investment Markets and Transaction; Investment Information And Plans; Steps in Investment Analysis; Investment Feasibility; Measuring Investment Return and Risk; Financial (Payback Method, Rate of Return, Net Present Value, Internal Rate of Return), Economic and Social

(Gender equity), Environmental. Business Plan (Concepts of Entrepreneurship, Financial, Statements and Ratio Analysis, Pillars of Business Plan, Business Plan Development).

Mode of Course Delivery

The course will be delivered through lectures, case studies, assignments, presentation and term paper on developing business plan.

Assessment Methods

The learners will be assessed in two ways, continuous assessment at least 40% and final examination. The continuous assessment may include: assignment on financial and its ratio analysis, developing business plan for investments, test, seminar, group work.

4) FVC 823 Agribusiness Financial and Risk Management (2 Units)

Course Description

This course will equip students with knowledge and skill of financial and risk management in Agri-business and value chain. The course covers issues in financial management; value chain finance; credit management; and risk management.

Course Objective

After completion of this course, students will be able to:

- Explain concepts of financial and risk management
- Develop financial statements and conduct its analysis
- Analyze credit markets and information flow
- Manage credit risk
- Manage value chain finance
- Evaluate agricultural credit policies

Course Content

Financial Management (Role, Nature and Scope of Financial Management, Basic Economic Principles Applied to Financial Management, Type of Finance: National and International Finance, Tasks of Finance Manager, Information Flow, Financial Analysis), Planning and Control; Value Chain Finance; Credit Management (Sources of Agribusiness Credit, Credit Analysis and Performance Based Lending, Credit Instruments and Legal Documentation, Credit Scoring and Risk Rating, Information Asymmetry and Credit Risk Management, Formulating Credit Proposal, Agricultural Credit Policies, Credit Management in Value Chain, Role of Gender in Credit Management), Risk Management (Concepts of Risk and Uncertainty, Types of Risk, Risk Measurements, Risk Attitudes, Risk Minimization and Decision Rules).

Mode of Course Delivery

The teaching learning process of the course will mainly depend on lectures, presentations on scenario analysis, discussions and group work to enhance student centeredness and competence orientation. The instructor is expected to use case studies for enhancing practical learning.

Assessment Method

Continuous assessment constitutes at least 40% of the evaluation and the remaining proportion of evaluation will be final exam.

5) FVC 824 Business Law (2 Units)

Course Description

This course introduces the student to the legal and ethical framework of business. Contracts, negotiable instruments, the law of sales, torts, crimes, constitutional law, the Uniform Commercial Code, and the court systems are examined.

Course Objectives

Upon completing the requirements for this course, the student will be able to:

1. Identify legal and ethical issues that arise in business decisions and the laws that apply to them.
2. Identify the elements of a contract.
3. Describe the structure of Nigeria court system.
4. Identify laws, conditions and regulations in national and international work environments

Course Content

Hire purchase: its meaning and formation, the right and obligations of the parties. Contract of employment; the nature and formation of contracts of employment, rights and duties of employers and employees, termination and dismissal, and remedies for breach of employment contract, redundancy. Insurance contract:- Its meaning, features and outline of concepts and principles; insurable interest, premium, indemnity and fixed sum insurance, subrogation and contribution. Assignment of policy, partnership;- Definitions, nature and types; general and limited partnerships; formation and articles of partnership, types, rights and duties of partners; relationship of partners with each other and with third partners, dissolution of partnership, Banking and Negotiable instruments:- The legal relationship of banker and customer and their mutual duties; the meaning and characteristics of negotiable instruments (Bill of Exchange, Cheques, promissory notes, etc.); Right and duties of the parties to a Bill of Exchange including the rights and duties of the holder in due course; Cheques and their crossing. Trust and Estate. Administration:- Appointment, duties, powers, rights and accounts of trustees, executors and administrators. Bankruptcy:- Issue of receiving order, appointment duties and powers of official receiver and trustee in bankruptcy, statement of affairs and deficiency.

Mode of Course Delivery

This course will be delivered through lectures, assignments, brainstorming sessions, crossover discussions and presentations.

Assessment Method

Continuous Assessment: There will be at least two continuous assessment which will account for 40% of the evaluation.

Final Exam: There will be one final exam. The exam covers material from class and the text as well as any readings by the students. The exam will generally consist of a few brief essay questions and a few problems to be solved. The exam will account for 60% of the total score.

6) FVC 825 Digital technology for Agri-food System (2 Units)

Course Description

To equip students with cutting-edge knowledge and practical skills in applying digital technologies in the agri-food sector, fostering innovation, sustainability, and efficiency in agricultural practices and food systems across Africa. Graduates will be prepared to drive digital transformation in agriculture, enhance food security, and contribute to economic development while addressing the challenges posed by climate change.

Course Objectives

The primary objective of this course is to equip students with cutting-edge knowledge and practical skills in applying digital technologies in the agri-food sector. By the end of the course, students should be able to:

- Understand the role and impact of digital technologies within the agri-food value chain;
- Apply data science, remote sensing, and GIS technologies for improving precision agriculture;
- Acquire the skills to design, deploy, and manage Internet of Things (IoT) and sensor networks for monitoring soil, climate, and crop conditions, facilitating data-driven decision-making in farming;
- Explore the principles of precision agriculture and smart farming technologies, emphasizing digital tools through relevant case studies;
- Understand the application and potential of robotics and automation in agriculture, including drones and autonomous vehicles;
- Learn the fundamentals of block chain technology and its applications in enhancing food safety and traceability within the agri-food chain;
- develop strategies for leveraging digital platforms to enhance agricultural extension services and improve digital literacy among farmers;
- analyze the role of digital marketplaces and financial services in agriculture; and

- Understand the agri-tech ecosystem, including the development and scaling of innovative solutions, and the policy and regulatory environment supporting agri-tech entrepreneurship.

Course Content

- Introduction to Digital Technologies in Agri-food Value Chain Systems: overview of digital technologies in agriculture; digital transformation in agri-food systems: global vs Nigerian context; challenges and opportunities in African agriculture.
- Data Science and Analytics for Agri-food Value Chain Systems: principles of data science in agri-food value chain systems; remote sensing and GIS for precision agriculture; big data analytics and its application in crop forecasting and pest management. Internet of Things (IoT) and Sensor Technologies in Agri-food Value Chain Systems; introduction to IoT and sensors in farming; design and deployment of sensor networks for soil, climate, and crop monitoring; data management and analysis for informed decision-making.
- Smart Farming and Precision Agriculture: principles of precision agriculture; digital tools and technologies for site-specific crop management**.** Case studies: Success stories of precision farming in Nigeria.
- Agricultural Robotics and Automation: overview of robotics in agriculture; drones in crop monitoring and spraying; autonomous tractors and robotic harvesters: Prospects for Nigeria.
- Blockchain for Traceability in the Agri-Food Chain: introduction to blockchain technology; applications of blockchain for food safety and traceability; case studies on blockchain adoption in Nigerian agri-food systems.
- Digital Extension Services and Farmer Digital Literacy: digital platforms for agricultural extension services; strategies for enhancing digital literacy among farmers; role of mobile technologies in reaching remote farmers**.**
- Digital Platforms for Market Access and Agri-Finance: digital marketplaces for enhancing access to markets for smallholder farmers; opportunities and challenges of digital financial services (DFS) in agriculture: the role of mobile technology in providing agricultural advisory services. Innovation and Entrepreneurship in Agri-Tech: ecosystem for agri-tech startups in Nigeria; funding and scaling agri-tech solutions; policy and regulatory environment for agri-tech innovation.
- Final Project: A capstone project where students will develop a prototype or detailed plan for a digital technology solution addressing a specific challenge in the Nigerian agri-food sector. This will involve problem identification, technology selection, system design, and an implementation plan, culminating in a presentation to an expert panel.

Mode of Course Delivery

This course combines lectures, hands-on workshops, case studies, field visits, and guest lectures from industry experts. Emphasis will be placed on collaborative learning, with students encouraged to work in teams for projects and assignments. The use of online learning platforms will also be integrated to provide access to resources and facilitate discussions beyond the classroom.

Assessment Method

Continuous assessment (assignment, tests, presentations etc.) will account for 30% of the evaluation,

and the remaining is final exam.

7) FVC 826 Sustainability of Commodity and Food Value Chains (2 Units)

Course Description

This course will provide students with the necessary knowledge and skills to critically appraise and evaluate sustainable commodity and food value chains, particularly focusing on agribusiness and food value chain projects. Students will be introduced to the concept of sustainability, tools of cost-benefit analysis of sustainable practices, ethical considerations in food value chain management, and food waste reduction and resource management.

Course Objectives

The primary objective of this course is to equip students with the theoretical and practical understanding of sustainability of food value chains. At the end of the course, students should be able to:

- understand the essence of sustainability in food systems and agribusinesses;
- apply the concept of sustainability in managing food value chains;
- effectively reduce food waste and efficiently manage resources in food value chains;
- understand and apply ethical and social considerations in food production and value chain management;
- conduct cost-benefit analysis of sustainable practices in agribusiness and food value chain projects; and
- Use case studies and best practices to describe sustainability of commodity and food value chains in Nigeria and elsewhere.

Course Content

Introduction to Sustainability and Food Systems: definition of sustainability; overview of the food value chain; importance of sustainable food production. Sustainable energy and food value chain: energy consumption in agriculture; greenhouse gas emissions from food systems; production (solar, wind, and biomass energy in agriculture); energy-efficiency (production, processing and transportation). Sustainable Practices in food value chain: agro ecology; organic farming techniques; water usage and pollution in food production; precision agriculture; smart farming technologies; cold chain management and food preservation; sustainable packaging and distribution systems. Food Waste Reduction and Resource Management: causes and consequences of food waste; strategies for reducing food loss and waste; resource recovery and circular economy approaches. Ethical and Social Considerations in Food Production: fair trade and ethical sourcing; labour rights and social justice in agriculture; environmental standards; cost-benefit analysis of sustainable practices; market incentives for sustainability. Case Studies and Best Practices. Project Work and Presentations

Mode of Course Delivery

This course will be delivered through a combination of lectures, case studies, group discussions, and practical exercises.

Assessment Method

Continuous assessment (assignment, tests, presentations etc.) will account for 30% of the evaluation, and the remaining is final exam.

8) FVC 827 Livestock Animal Production (1 Unit) (Elective)

Course Objective

The course objectives are to:

1. Explain the management and structure of poultry, rabbits, cattle, sheep and goat Production systems;
2. Explain the structure of poultry, rabbit, dairy and beef, mutton and chevron enterprises;
3. Explain the basics of traditional and modern poultry, rabbit, cattle, sheep and goat enterprises;
4. Explain feeding and housing need of poultry, rabbit, cattle, sheep and goats;
5. Explain health challenges of poultry, rabbit, cattle, sheep and goats and traditional practices of maintaining good stock;
6. Understand how to select poultry, rabbit, cattle, sheep and goat for breeding; and
7. Explain marketing and nature of value chain in poultry, rabbit cattle, sheep and goat Production.

Learning Outcomes

Students are expected to acquire knowledge of:

1. Attributes, problems and prospects of poultry, rabbit, cattle, sheep and goats in Nigeria;
2. Physical identification of poultry, rabbit, cattle, sheep and goat;
3. Identifying and describing the various enterprises (egg production, meat production, milk production, etc.); and traditional and modern management practices peculiar to each species and enterprise in each in terms of housing and equipment needs; feeds and feeding requirements; health and health management practices; reproduction management/regulation; and marketing and the economics of these enterprises.
4. Poultry, Ruminant products and importance of their value chains.

Course Contents

Poultry, rabbit, Cattle, Sheep and Goat production and management systems: Problems and prospects in Nigeria. Basic differences between broiler and layer birds, different broiler species, different layer species, sheep and goats; Indigenous and exotic breeds of beef and dairy cattle, sheep and goat; poultry. Egg production system and enterprises, Broiler production system and enterprises, Dairy production system and enterprises.; Egg, Beef, Mutton and Chevon production systems and enterprise

development; Selection and Management of breeding stock, growing and young animal, Housing, equipment and feeding principles of poultry, rabbit, cattle, sheep and goats. Health management of ruminant animals. Ethno-veterinary practices in poultry, rabbit, cattle, sheep and goat Production; Marketing of animals and their products; structure of poultry, rabbit, cattle sheep and goat value chain.

Mode of Teaching:

Lectures (online and physical, practical and group studies).

Mode of Assessment:

Continuous assessment (30%); exams (60%); practical (10%)

9) FVC 828 Horticultural and Ornamental Crop Production (1 Unit)

Course Content:
Origin and distribution of major vegetable and fruit crops: nursery management: cultivation practices in Nigeria and elsewhere, cultivars, propagation, manures and fertilizers, irrigation, drainage, weed control and crop protection practices: harvesting and processing: uses and quality aspects of important vegetable and fruit crops. The importance, classification and economic potentials of ornamental horticulture; establishment and management; propagation and nursery; establishment and maintenance of trees, shrubs and perennial herbs, annual and biennial flowers, cut flowers, principles of landscaping; planning public parks, school garden and house compound garden; pot plants; bonsai and topiary.

Practical; Nursery practice, identification of ornamental plants, training and trimming of shrubs, hedges; sketches of landscape designs; handling and display of cut flowers

Course Objectives:

The objectives are to:

- Provide students with a solid understanding of the fundamental principles of horticulture and the science behind plant growth, development, and propagation.
- Educate students on the various horticultural crops and ornamental plants, their specific requirements, and the methods for their cultivation, management, and post-harvest care.
- Provide students with skills in landscape design, installation, and maintenance, ensuring they can create aesthetically pleasing and functional outdoor spaces using ornamental plants.
- Equip students with the knowledge of starting and running a horticultural or ornamental crop production business, including marketing, financial management, and business planning.

Mode of Course Delivery: This course will be delivered through lectures, case studies, assignments, brainstorming sessions, crossover discussions, projects, presentations, and demonstrations.

Assessment Methods:
Continuous Assessment: There will be at least two continuous assessment which will account for at least 40% of the evaluation.

Final Exam: There will be one final exam. The exam covers material from class and the text as well as any readings by the students. The exam will generally consist of a few brief essay questions. The exam will account for 60% of the total score.

Third Semester

1) FVC 800 Thesis Research (6 units).

This is the final year research project intended to test the student's skill in analyzing and writing research report based on an empirical or library study of a specific subject matter on Agricultural Value Chain of a named commodity. Thesis writing will be carried out by the students under supervision. A supervisory team comprising of a Major and co-supervisor (s) will be constituted for each candidate by the Postgraduate Departmental Board. The research should be problem solving in nature. The goal is to develop in the students the ability to identify problems related to value addition on agricultural commodities and take informed decisions. The students' thesis will be typed and bound in a prescribed format.

19.0 Personal Data of Staff for the Programme

I) Academic Staff

Name of Staff	Rank/Designation Salary Scale	F/T	Qualification, Dates Obtained and Specialization,	Courses Taught
1. Prof. Likita TANKO	Professor; UASS 7 Step 8	F	Ph.D. Farm Management and Production Economics, 2004; M.Sc. Production Economics, 2001; B. Agric. 1996; Quantitative Techniques and Production Economics	Microeconomic Theory, Econometrics, Agribusiness Management, Production Economics, Managerial Economics, Firm Financial Management, Mathematical Economics, Advanced Production Economics, Food Value Chain Management, Principles of Product development, Agribusiness and Financial Risk Management, International Trade

2. Prof. Chiemela Enyinnaya CHINMA	Professor; CONUASS 7 step 6	F	PhD. Food Science and Technology (2012) M.Sc. Food Science and Technology (2006) B.Sc. Food Science and Technology (2002); Food Processing and Product Development	Fundamentals of food processing, Food Processing and Preservation, Advanced food processing, Undergraduate Scientific Writing and Presentation, Graduate Scientific Writing and Presentation; New Food Development, Food Packaging, Food Engineering
3. Dr. BELLO, Ladi Yunusa	Associate Professor; UASS 6 Step 3	F	BSc. Botany (1986), MSc. Crop Protection (2002), PhD Crop Protection (2014); Nematology	Plant Nematology, Agricultural Microbiology, Principles of Crop Protection, Diseases of Horticultural Crops, Crop Pests and Disease Management, Ornamental crops production, Mycology and Fungi Diseases Plant Disease Physiology.
4. Prof. Abdullahi Muhammad ORIRE	Professor; UASS 7 Step 4	F	PhD (AquacultureNutrition-2010); MTech (Fisheries) 1999, B.Agric. (1994); Water Resources, Aquaculture and Fisheries Technology (Aquaculture Nutrition	Fish Nutrition, Advanced Fish Nutrition, Fish postharvest Technology, Fish population dynamics, Fish Ecology, Food Microbiology and Mycotoxicity, Marine and other fish products, Biostatistics, Fish marketing and utilization.
5. Prof. Julian Chukwuemeka ANUONYE	Professor; CONUASS 7 step 8	F	Ph.D. Food Science and Technology (2006); M.Sc. Food Science and Technology (1997) B.Sc. Food Science and Technology (1989); Food Chemistry and Product Development	Fundamentals of food processing, Advanced food processing, Advanced food chemistry, Food Biochemistry, Food Biotechnology, Milling, Baking and Pasta Production, Sensory Evaluation of Foods; New Food Development

6. Prof. Abigail John JIRGI	Associate Professor; CONUASS 7 Step 4, 28th July 2005	F	Ph.D. 2013 M.Sc. 2002 B.Sc. 1995	Gender in Value Chain Management, Principles of Agricultural Economics, Agricultural Development and Policy, Farm Management and Accounting, Production Economics, Agricultural Marketing and Pricing, Farm Management and Agricultural Marketing, Agricultural Pricing, Environmental Economics, Production Economics, Introduction to Econometrics, Entrepreneurship
7. Prof. Michael Akindele OJO	Professor CONUASS, 7 Step 4; 5th June 2007	F	Ph.D. 2013, M.Sc. 2003 B. Tech. (Agric.) 1999	Introductory Economics, Agricultural Marketing and Pricing, Econometrics, Agricultural Marketing, Mathematical Economics, Managerial Economics, Digital Technology for Food Systems, Investment Analysis and Business Plan Development
8. Prof. Jacob Haruna TSADO	Professor; CONUASS, 7 Step 4; 5th June 2007	F	Ph.D. 2013 M.Sc. 2004 B. Sc. (Edu.) Agric 1995	Principles of Agric Extension and Administration, Diffusion of innovation, Technological Change in Agriculture Operation and Maintenance of Media Equipment, Principles of Agric Extension and Administration
9. Dr. Abdulkadir USMAN	Associate Professor; CONUASS 6/2	F	Doctor of Veterinary Medicine (DVM)1996; Master of Veterinary Medicine (MVM) 2010; Doctor of Philosophy in Veterinary Medicine (PhD Vet Med) 2013; Veterinary Medicine	Anatomy and Physiology of Farm Animals; Livestock Ruminant animal production; Sheep, goat and cattle production; poultry rabbit, swine, and equine production; Principles of animal health; Animal physiology; Animal Health; Artificial Insemination; Veterinary Drug residue in food; Toxicology
10. Prof. Mohammed Attahiru NDANITSA	Professor, CONUASS 7 Step 2; 15th August 2001	F	Ph.D. 2013 M.Sc. 2005 B. Sc. (Agric.) 1994	Agribusiness and Financial Risk Management, Principles of Agric. Economics, Macro Economic, Agric. Finance & Project Appraisal, Agric. Production Economics, Farm Management & Accounting, Agribusiness & Financial

				Management, Fishery Economics, Fishery Resource Economics, Farm Management & Fisheries Bus. Mgt., Aquaculture and Fisheries Technology
11. Prof. Ezekiel Salawu YISA	CONUASS 7 Step 2; 17th September 2001	F	PhD 2015, M.Sc 1998, B. Agric. 1991; Farm Management and Production Economics	Microeconomic Theory, Programme Planning In Extension, Rural Sociology and Development, Rural Community Development, Introduction to Agricultural Economics, Macroeconomic Theory, Agricultural Business and Management, Elements of Farm Management, Entrepreneurship Studies, Agricultural Production Economics
12. Dr. JIBRIN, Safiya (Mrs)	Lecturer I CONUASS 4 Step 3	F	Ph.D. 2024 M. Tech, 2016 B. Agric., 2006; Community Development	Operation and Maintenance of Media Equipment, Agricultural Communication System, Gender in Value Chain Management
13. Mr. Ibrahim Abdullahi	Lecturer I CONUASS 4, Step 2	F	B. Agric Tech (Fisheries) 2010 MTech (Fisheries) 2016 PhD in view (Marine Biology); Fish Ecology/Fisheries Management	Introduction to fisheries and wildlife, Fishery Economics, Introduction to Hydrobiology, Oceanography, Production of other Marine Products, Fish Farming Techniques and Hatchery Management, Itchthyology, Fish Technology, Processing and Storage
14. Dr. OYEWALE, Rasheed Olakitan	Senior Lecturer CONUASS 05, Step I	F	National Diploma Agric Tech(1997), C. Agric (2005), MSc. Crop Protection (2014), PhD (Crop Protection); Crop Protection (Entomology)	Pests of Crops, Insect Morphology and Physiology, Insect Ecology, Insect Pests of Horticultural Crops.

II) Laboratory/Technical Staff

Name	Rank/Designation	Qualifications and Dates Obtained	Duties Performed

1. YUSUF, Lakpene Tauheed	Principal Technologist (2007)	National Diploma (1993), Cert. Course (Public Adm.) (1997). Higher National Diploma (1999), B. Agric. (2016)	Market Survey, Field Extension Village Survey, Data generation and Studio Technician.
2. NDATSU, James Alhassan	Assistant Chief Officer (2007)	National Diploma (1997) Higher National Diploma (1999) PGD (2013), M.Tech. (2019) Professional body (ASUTON)	Market Survey, Field Extension, Village Survey and Studio Technician. Audiovisual aids, field work, data collection, coding analyst and video and camera coverage. Audiovisual maintenance and general services (practical demonstration)
3. SABA Muhammad Awwal	Technologist I	HND Sci. Lab. Tech.	Arrangement and supervision of student practical classes and other duties assigned by the HOD.
4. Umar Abubakar	Principal Technologist Officer (2009)	Primary school certificate, Wunangi Kede Primary School Kpata, Katcha (1979-1984); Secondary School Certificate, Muhammadu Kobo Secondary School Lapai (1987- 1992). Higher National Diploma (H.N.D) Niger State College of Agriculture, Mokwa (2004-2005).	Market Survey, Field Extension Village Survey and Studio Technician.

III) Administrative / Non-teaching Staff

Name	**Rank/Designation and Date of First Appointment**	**Qualifications & Dates Obtained**
1. GANA, Abigail	Chief Clerical Officer Admin, on HATISS 6 step 3, 7th July, 2010	N.D. Public Admin. 2014, Diploma 2004, SSCE 2002, Primary 1992
2. ABUBAKAR, Mahmud	Chief Clerical Officer CONTISS 6 Step 12	ND Public Administration (2002)
3. HASSAN, Cecilia Enedubiojo	Confidential Secretary III; HATISS 8/3, 11th November, 2011	Higher National Diploma in Office Technology and Management, from Federal Polytechnic Nasarawa State, 2022.

20.0 Facilities Available to the Department Offering Programme

Lecturers are adequately accommodated with chairs and tables. All professors have their personal offices. All associate professors and senior lecturers occupy single offices. The following facilities are available for the programme:

Type of Facility	No. Available
1. Lecture Room	8(shared)
2. Lecture Theatre	2(shared)
3. Assembly/Exams Hall	8
4. Laboratories	4
5. Workshops	2
6. Studios	2
7. Library	1(shared)
8. Office Accommodation	28(shared)

20.1 Audio Visual Laboratory

The equipment in the Laboratory are listed below:

S/No.	Items	Remark
1	Overhead Projector	2
2	Desktop/UPS	12
3	Refrigerator	2
4	Cabinet	1
5	Glass Book shelves	1
6	Printer	1
7	Chairs and Tables	22
8	Hosnic wireless Radio Box	1
9	Handle wireless Microphone	1
10	Net wireless Microphone	1
11	Microphone Dust Cover	1
12	Mabo Quantum Overhead Projector	1
13	Pls of Screen (60x 60)	1
14	Camera Digital	1
15	Radio/Tape recorder	2
16	Colour TV "21"	1
17	Wireless Public Address system	1
18	Video Recorder	1
19	Power Generator	2
20	IBM Electric Typewriter	1
21	Reference books/Journals	385

22	Past students project	218
23	Electrical stabilizers	2
24	Electric Kettle	2
25	Spiral Binding Machine	1
26	Tea Cups & Saucers	12
27	Stata II Software	1
28	Cushion Chairs	1set
29	Sharp Photocopier Machine	1
30	Power Point Projector	2
31	Projecting Screen	1
32	GPS	6
33	Motor Cycle	2

20.2 Econometric Laboratory

Item No.	Description of items	Quality in Stock (Usable items only)	Remarks
1	Stata 11 Software	10 User	Functional
2	IBM Electric Typewriter	1	Functional
3	Laptop	4	Functional
4	Desktop	8	Functional
5	Power Point projector	3	Functional
6	Projector Screen	4	Functional
7	Video Camera	3	Functional
8	Digital Camera	2	Functional
9	GPS	17	Functional
10	Motor Cycles	2	Functional

20.3 Food Processing Laboratory

Item No.	Description	Quantity in stock	Remarks
1	Sugar cane juice extractor	1	Good condition
2	Hammer mill	1	Good condition
3	Groundnut oil extractor	1	Good condition
4	Juice extractor	2	Good condition
5	Canning machine	1	Good condition
6	Caping machine	1	Good condition
7	Baking oven	1	Good condition
8	Blender	1	Good condition

9	Baking oven	1	Good condition
10	Gas cooker	1	Good condition
11	Weighing balance	1	Good condition
12	Deep freezer	1	Good condition
13	Refrigerator	1	Good condition
14	Digital weighing balance	1	Good condition
15	Sealing machine	1	Good condition
16	Solar dryer	5	Good condition
18	Deep fryer	1	Good condition
19	Microwave	1	Good condition
20	Groundnut oil extractor	1	Good condition

20.4 Food Chemistry Laboratory

Item	Description	Quantity in stock	Remarks
1	Water bath	1	Good condition
2	Refrigerated centrifuge	1	Not functional
3	Hot air oven	1	Good condition
4	Water distillation unit	1	Good condition
	Flame photometer	2	Good condition
5	Homogenizer	1	Good condition
6	UV spectrophotometer	2	Good condition
7	Digital pH meter	1	Good condition
8	Brookfield Viscometer	1	Good condition
9	Digital refractometer	1	Good condition
10	Top loading balance	1	Good condition
11	Heating mantle	1	Good condition
12	Soxhlet extraction unit	2	Good condition
13	Incubator	1	Good condition
14	Furnace	1	Good condition
15	Water bath	1	Good condition
16	Desiccator	1	Good condition
18	Digital weighing balance	1	Good condition
19	Magnetic stirrer	1	Good condition
20	Digestion unit	2	Good condition
21	Colorimeter	1	Good condition
23	Fume cupboard	1	Good condition

20.5 Food Microbiology Laboratory

Item	Description	Quantity in stock	Remarks
1	Microscope	6	Good condition
2	Digital pH meter	1	Good condition

3	Autoclave	1	Good condition
4	Fungi hood	1	Good condition
5	Incubator	1	Good condition
6	Oven	1	Good condition
7	Water bath	1	Good condition
8	Top loading balance	1	Not functional
9	Anaerobic jar	1	Good condition
10	Pressure pot	1	Good condition
11	Top loading balance	1	Good condition
12	Heating mantle	1	Good condition
13	Water bath	1	Good condition
14	Digital weighing balance	1	Good condition
15	Magnetic stirrer	1	Good condition

20.6 Centre for Genetic Engineering and Biotechnology

Item No.	Description	Quantity in stock	Remarks
1	Raman spectroscopy	1	Good condition
2	Thermogravimetric analyzer	1	Good condition
3	Scanning electron microscope	1	Good condition
4	UV- Visible Spectrophotometer	1	Good condition
5	High speed refrigerated micro centrifuge (20,000 rpm)	1	Good condition
6	High speed refrigerated micro centrifuge (13,600rpm)	1	Good condition
7	Microplate reader	2	Good condition
8	Thermal Cycler (PCR)	1	Good condition
9	Fluorescent spectrophotometer	1	Good condition
10	Freeze dryer (Floor standing)	1	Good condition
11	Freeze dryer (Bench top)	1	Good condition
12	Hot air bath	1	Good condition
13	Electrophoresis machine (Cellulose acetate paper tank)	1	Good condition
14	Electrophoresis machine (Vertical gel tank)	1	Good condition
15	Fluorescent Microscope	1	Good condition
16	Ice Flaker	1	Good condition
17	Hot air oven	1	Good condition
18	Biochemical analyzer	1	Good condition
19	Fume cupboard	1	Good condition
20	Analytical weighing balance	2	Good condition

21	Microhematocrit centrifuge	1	Good condition
22	Hemoglobin meter	1	Good condition
23	Transilluminator	1	Good condition
24	Soxhlet extraction apparatus (2L)	2	Good condition
25	Soxhlet extraction apparatus (1L)	2	Good condition
26	Water bath	2	Good condition
27	Water distiller	2	Good condition

21.0 Available Books in Departmental Library

S/No	Book	Author(S)	Publisher	Year
1	Functional Properties of Food Components (2nd Edition)	Yeshajahu, P.	Academic Press	1998
2	Beverages: Technology, Chemistry and Microbiology	Varnam, A.H and Sutherland, J.P.	Chapman and Hall	1994
3	Tropical Plants Perishables: Handling, Storage and Processing	Okaka, J.C.	Silicon Valley Publishers, Enugu	1997
4	Understanding Food Science and Technology	Murano, P.S.	Thomson Wadsworth	2003
5	Cereal Science and Technology	Hoseney, R.C.	American Association of Cereal Chemists	1994
6	Handbook of Sensory Methods and Analysis	Iwe, M.O.	Rojoint Communication Services, Enugu	2002
7	Nutritional Evaluation of Food Processing	Karmas, E and Harris, R.S.	Van Nostrand Reinhold	1998
8	Nutrition and Dietetics (2nd Edition)	Joshi, S.A.	McGraw Hill	2002
9	Handling, Storage and Processing of Plant Foods (2nd Edition)	Okaka, J.C.	Academic Publishers, Enugu	2009
10	Integrated Food Science and Technology for the Tropics	Ihekoronye, A.I. and Ngoddy, P.O.	Macmillan	1985
11	Brewing Science and Technology: A comprehensive Approach	Ogbonna, A.C.	Abaam Publishing, Uyo	2011
12	Unit Operations in Food Processing	Earle, R.L.	Pergamon Press	2008
13	Fruit and Vegetable Phytochemicals: Chemistry,	Laura, A., Alvarez-Parrilla,	John Wiley and Sons	2009

	Nutritional Value and Stability	E. and Gonzalez-Aguilar, G.A. (Eds)		
14	Engineering Properties of Foods	Rao, M.A., Risvi, S.S., Datta, A.K. and Ahmed, J. (Eds)	CRC Press	2014
15	Food Processing and Technology	Fellows, J.P.	CRC Press	2009
16	Food Quality, Safety and Technology	Lima, G.P. and Vianello, F. (Eds)	Springer	2013
17	Careers in Food Science: Undergraduate to Professional	Hartel, R.W. and Klawitter, C.P.	Springer	2008
18	Food Physics	Ludger, O.F. and Arthur, A.T.	Springer	2008
19	Essentials of Food Science	Vickie, A.V.	Springer	2013
20	Food Chemistry	Belitz, H., Werner, G. and Peter, S.	Springer	2009
21	Sensory E valuation of Food	Lawless, H.T. and Heymann, H.	Springer	1999
22	Food Analysis: Laboratory Manual	Nielsen, S.S. (Ed)	Kluwer Academic/Plenum Publishers	2003
23	Sensory Evaluation of Food: Principles and Practice	Lawless, H.T. and Heymann, H.	Springer	2010
24	Food Science and Technology	Campbell-Platt, G.	Wiley-Blackwell	2009
25	Food Process Engineering and Technology	Berk, Z.	Elsevier	2013
26	Fundamentals of Food Processing and Technoogy	Gould, W.	Elsevier	1997
27	Public Health Nutrition	Michael, J.G., Barrie, M.M., John, M.K. and Lenore, A. (Eds)	Wiley-Blackwell	2004
28	Nutrition and Metabolism	Lanham, S.A., Macdonald, I.A. and Roche, H.M.	Wiley-Blackwell	2010
29	Essential Microbiology (2nd Edition)	Stuart, H.	Wiley-Blackwell	2013

22.0 Available Books for the Programme in the University Library

S/N	Book	Author(S)	Year
1	Food Microbiology	M. R. Adams	1995
2	Statistic aspect of the Microbiological Examination of Food	Basil Jarvis	2008
3	Food Biochemistry	Charles Alais	1999
4	Handling, Transportation and Storage of Fruits and Vegetable	S. K. Chattopadhyay	2012
5	Nutrition and Health	Carpenter & Calloway	1981
6	Fish Smoking and Drying	J. R. Burt	1998
7	Thermal Analysis of Foods	V. R. Harwalker	1999
8	Malt and Malting	Dennis E. Briggs	1999
9	Food and Nutrition	Anita Tull	1987
10	Food Hygiene in the Catering & Retail Trades	H. K. Lewis	1998
11	Quality Attributes and Their Measurements in Meat, Poultry and Fish Products	A. M. Pearson	1994
12	Advances in Baking Technology	B. S. Kamel	1999
13	Legumes Based Fermented Foods	N. R. Reddy	1986
14	Human Nutrition	R. F. Mottram	1979
15	Guide To Quality Management System For Food Industry	Ralph Early	2001
16	Nutrition and Development	Margret Biswas	1985
17	African Pot	Shimite Katung	2012
18	Essentials Of Food Science	Vickie A. Vaclavik	2003
19	Mathematical Modelling of Food Processing Operation	Stuart Thorne	1998
20	Methods Food Preservation	P. Shrivastava	2016
21	Thickening and Gelling Agent for Food	Alan Imeson	1992
22	Food Freezing	W. B. Bald	1991
23	Food Preservation and Processing	Manoranjan K.	2007
24	The Chemical Analysis of Foods and Foods Products	Moris B. Jacobs	1973
25	Food and Health	M. L. Narasaiah	2016
26	Food Analysis	Yeshajahu P.	1994
27	Food Microbiology	William C. Frazier	2014
28	Food Beverage Service	Denis Lillicrap	2006
29	Method for the Diagnosis of Fish Diseases	Zdenek Lucky	1977
30	Experimental Biochemistry	Robert L. Dryer	1990

31	Nutritional Correlates of Body Mass Index	B. Babitha	2010
32	Encyclopaedia of Fish Culture	S. M. Hussain	2011
33	Fish as Food	Naveen Gupta	2014
34	Enzyme Biotechnology	M. Prakash	2007
35	500 of the Healthiest Recipies and Health Tips	H. Courteny	2012
36	Biochemistry of Carbohydrate	S. K. Prasad	2010
37	The 10 Secrets of 100% Health Cook Book	Patrick Holford	2012
38	Protein Chemistry	S. Chatterjee	2012
39	Meat Science	R. A. Lawrie	1979
40	The Science of Food and Cooking	Cameron A.G	1978
41	Elementary Food Science	Roy Hopwood	1997
42	Food Preservation by Moisture Control	C. C Seow	1998
43	Food Variety Terminology	M. Prakash	2013
44	Food and Beverage Service	John Cousin	2014
45	Food Security, Facts and Issues	N. Mukundan	2014
46	Food Processing	M. K. Singh	2007
47	Food, Eating And Obesity	David J. Mela	1998
48	Consumption, Food and Taste	Alan Warde	1997
49	Liquid Modification of Protein	N. M Hooper	1992
50	Obesity	Gerald Litwack	2013
51	Viscoelastic Properties of Food	M.A. Rao & J. F. Steffe	1998
52	Enzymes And Food Processing	G.G Birch &K. J. Parker	1999
53	Food Science, Nutrition, and Care Management (Volume 1-5)	A.N Sachdeva, and Co.	2009
54	The Theory of Hospitality and Catering	David Foskett	2011
55	Discovering Nutrition	Paul Insel & Don Ross	2010
56	Human Nutrition	Catherine Geissler	2005
57	Food protein source	N.W. Pirie	1995
58	Encyclopedia Of Agriculture & Food System	Neal K. Van alfen	2014
59	Retrospect & Prospect of Protein Research	Li Zai-ping	1991
60	Lipid Analysis	W.W Christie	1982
61	Method for the Determination of vitamins in foods	G. Brubacher	1986
62	Encyclopaedia of Food and Agriculture	N. Mukhderjee	2011
63	Chemistry of Amino Acids and Proteins	G. Singh	2007
64	ABC of Nutrition	A Stewart Truswell	1992
65	Nutrition	Caroline K, Uddoh	1980
66	Food Microbiology	M.R Adams	1995

67	Lipids in Foods	F.D Gunstone	1983
68	Food Gels	Peter Harris	1999
69	Additives Migration from Plastics into Foods	T. R. Crompton	1979
70	Food Processing Technology	P J Fellows	2000
71	Edible Meat by- Product	A.M Pearson	1998
72	Control and Analysis for Food and Agricultural Products	Barun Guha	2014
73	True Nutrition, True Fitness	Jerrold winter	1991
74	Robotics in Meats, Fish and Poultry Processing	K. Khodabandehloo	1993
75	Industrial Chocolate, Manufacture and Use	S. T. Beckett	1994
76	Institutional Food Management	Mohini Sethi	2004
77	Advances in Food and Nutrition Research	S. L. Taylor	2009
78	Practical Cookery	David Foskett	2015
79	Nutrition through the Life Cycle	Judith e. Brown	2014
80	Biostatistics	K. Visweswara Wao	2007
81	Meat Science, Milk science and Technology	A. Neimann-Sorensen	1988
82	New Technologies and the future of Food and Nutrition	Gerald e. Gaull	1991
83	Food Engineering	R Paul Singh	2001
84	Development in Food Packaging	S.J. Palling	1998
85	Food Science	G.G. Birch	1977
86	Real Food for Families	Fran Warde	2006

23.0 List of other Required Textbooks and Journals

In addition to the available textbooks and journals in the SAAT and university libraries, the following textbooks also provide a comprehensive overview of various aspects of the food value chain, including management, logistics, sustainability, and quality assurance.

1. Food Supply Chain Management: Economic, Social, and Environmental Perspectives by Madeleine Pullman and Zhaohui Wu (2012)
2. Food Supply Chain Management and Logistics: From Farm to Fork by Samir Dani (2015)
3. Food Supply Chain Management by Jane Eastham, Liz Sharples, and Stephen Ball (2007)
4. The Essentials of Supply Chain Management by Hokey Min (2015)
5. Global Food Security and Supply edited by Wayne Martindale (2014)
6. Food Safety: Theory and Practice by Paul L. Knechtges (2011)
7. Sustainable Food Supply Chains: Planning, Design, and Control through Interdisciplinary Methodologies by Riccardo Accorsi and Riccardo Manzini (2017)
8. Food Supply Chain Management and Quality Assurance edited by Christien J.M. Ondersteijn, Hans

D. van Kooten, Gerard W.J. Giesen, and Ruud B.M. Huirne (2006)
9. Supply Chain Management: Strategy, Planning, and Operation by Sunil Chopra and Peter Meindl (2015)

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS MANAGEMENT

REGULATIONS AND SYLLABUS FOR MASTER OF SCIENCE IN AGRICULTURAL COMMODITIES VALUE CHAIN MANAGEMENT (MACVM)

P.O. BOX 210-40601

BONDO, KENYA

Tel:+254-572501804, www.jooust.ac.ke

September, 2024

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 Vision, Mission and Core Values of the Institution

a) **Vision**

A beacon of excellence in University Education and Research

b) **Mission**

To provide quality University education that nurtures creativity and innovation through integrated training, research and community outreach for sustainable development.

c) **Core Values**

Customer focus, Impartiality, Professionalism, Integrity and Meritocracy.

1.2 Philosophy of the Institution

A holistic scholarship service to humanity through wisdom, science and technology.

1.3 University Admission Requirements

a) JOOUST criteria for a Doctoral Degree Programme shall apply:

Candidates wishing to pursue a Doctor of Philosophy (PhD) programme at Jaramogi Oginga Odinga University of Science and Technology must meet the following requirements:

(a) Have appropriate preparatory academic training as evidenced by at least one of the following:
(i) Be a holder of a Master's Degree of Jaramogi Oginga Odinga University of Science and Technology

(ii) Be a holder of a Master's Degree or an equivalent academic qualification from any other Recognized institution.

b) JOOUST criteria for a Master's Degree Programme shall apply:

Candidates wishing to pursue a master's degree programme must meet the following requirements:

(i) Holders of at least Upper Second Class Honours Bachelor's degree or equivalent Qualification from recognized Universities.

(ii) Holders of a Lower Second Class Honours degree or postgraduate Diploma in from any Recognized universities and evidence of two years' of relevant work experience.

(iii) In addition to the above, applicants must meet the specific requirements of the Masters Programme as provided by the University Senate.

c) JOOUST criteria for a Bachelor Degree Programme shall apply:

(i) Candidates must satisfy the minimum University requirements of mean grade of C+ in Kenya Certificate of Secondary Education (KACE); OR

(ii) Have two principal passes in biology and chemistry in KACE and at least a credit in Mathematics at Ordinary level; OR

(iii)Holders of a KNEC equivalent diploma from a recognized college; OR (iv) Holders of a related degree from a recognized university.

1.3.1 Procedure of application for admission to the university

(a) Enquiries for a master's degree programme shall be made to the Registrar (Academic Affairs), Jaramogi Oginga Odinga University of Science and Technology, P. O. Box 210-40601, Bondo, Kenya.

(b) The closing date for receiving applications for the Master's Degree Programme shall be as determined by the Senate from time to time.

The application forms may be obtained from the JOOUST website: (http://www.jooust.ac.ke/)

1.4 Academic Resources

1.4.1 Facilities and Equipment

The facilities within the campus are shared among the different departments and include:

a) Lecture Rooms:

The University has adequate lecture rooms, lecture theatres and conference halls in the Main Campus and all its Campuses.

b) Library:

The University libraries have various sources of information, research, reading and instructional materials**.**

(i) Main Campus

The main campus library is a three-floors building accommodating 300,000 volumes. The library is equipped with books, and journals (both hardcover, paperback, and online), for various programmes offered at the University. In addition, plans are already underway to strengthen the teaching and learning resources by providing more books, e-books, journals, e-journals, CDs and DVDs, as well as to establish linkages with other institutions for wider access to academic and research resources. Moreover, the university's integrated library service software enhances access to library resources

(ii) Campuses

At each campus, library resources are purchased and stocked with recommendations and support from the Schools that houses the programme at the Main Campus.

c) Information and Communication Technology (ICT)

The University has a well-established ICT Department and support sections that provide IT services to the Main Campus and other Campuses for teaching and learning. The University website (http://www.jooust.ac.ke/) is operational. The local Area Network (LAN) link enables easy sharing of information and data across the University. The University also has provisions for multi-media facilities for teaching and learning.

d) Laboratories

The University has a Science Complex Building at the Main Campus that houses 26 laboratories for pure and applied sciences.

e) Tuition Farms/Fields

The University has a 50 Acre farm that support teaching and research in various fields of agricultural sciences.

1.4.2 Reference Materials

Core-texts in terms of numbers:

The University library is well stocked with at least three core texts per each unit course being offered:

(a) E-books in terms of subscriptions;

(b) Print journals in terms of subscriptions; and

(c) E-journals in terms of subscriptions and accessible databases.

The University has subscribed to different E-resources which can be used to access both text books and journals. The materials can be accessed through (http://www.lib.jooust.ac.ke/)

1.4.3 Academic Staff

(a) Academic Staff

The school of Agricultural and Food Sciences has established a pool of qualified staff in diverse disciplines both for full and part-time mode of teaching. The School is composed of academic faculty with expertise in different fields of agricultural sciences and related disciplines (Appendix IV). In addition, the School utilizes relevant expertise from other Schools of JOOUST as well as other regional and international institutions. Where necessary, the permanent academic faculty is supported by qualified part-time staff.

(b) Technical and Support Staff

The School of Agricultural and Food Sciences has access to qualified technical support staff including laboratory technicians, coordinators for research, training, and mentorship.

1.5 Programmes Offered by the Institution

1.5.1 List of Academic Programmes Offered in the Institution

1. Bachelor of Arts in Spatial Planning
2. Bachelor of Business Administration with IT
3. Bachelor of Education (Arts) with IT
4. Bachelor of Education (Early Childhood Development)
5. Bachelor of Education (Science) with IT
6. Bachelor of Education (Special Needs) Education) with IT
7. Bachelor of International Tourism Management
8. Bachelor of Logistics and Supply Chain Management
9. Bachelor of Science (Business Information Systems)
10. Bachelor of Science (Information Communication Technology)
11. Bachelor of Science in Actuarial Science with IT
12. Bachelor of Science in Agribusiness Management
13. Bachelor of Science in Agricultural Education and Extension
14. Bachelor of Science in Animal Science
15. Bachelor of Science in Biological Sciences
16. Bachelor of Science in Community Health and Development
17. Bachelor of Science in Computer Security and Forensics

18. Bachelor of Science in Construction Management

19. Bachelor of Science in Food Security

20. Bachelor of Science in Horticulture

21. Bachelor of Science in Public Health

22. Bachelor of Science in Renewable Energy Technology and Management

23. Bachelor of Science in Soil Science

24. Bachelor of Science in Water Resources and Environment Management

25. Master of Science in Food Security and Sustainable Agriculture
26. Master of Science in Agricultural Extension
27. Master of Science in Agribusiness Management
28. Master of Science in Horticulture
29. Master of Science in Animal Science
30. Master of Science in Soil Science
31. Master of Science in Urban Environmental Planning and Management
32. Master of Science in Pure Mathematics
33. Master of Science in Plant Taxonomy
34. Master of Science in Physics
35. Master of Science in Parasitology
36. Master of Science in Microbiology
37. Master of Science in Information Technology Security and Audit
38. Master of Science in Information Technology Management
39. Master of Science in Information Systems
40. Master of Science in Health Informatics
41. Master of Science in Epidemiology and Biostatistics
42. Master of Science in Ecology
43. Master of Science in Biomedical Sciences in Specialization on Medical Entomology, Parasitology, Parasitology or Immunology

44. Master of Science in Biology
45. Master of Science in Applied Statistics
46. Master of Science in Applied Mathematics
47. Master of Science in Food Security and Sustainable Agriculture
48. Master of Science Chemistry
49. Master of Public Health in Epidemiology and Disease Control
50. Master of Public Health (MPH)
51. Master of Logistics and Supply Chain Management
52. Master of Education in Planning and Economics of Education
53. Master of Education in Pedagogy
54. Master of Education in Guidance and Counseling
55. Master of Education in Educational Technology
56. Master of Education in Educational Psychology
57. Master of Education in Curriculum Studies
58. Master of Education in Administration and Management
59. Master of Education in Early Childhood Development and Education
60. Master of Business Administration
61. Master of Arts in Religion
62. Master of Arts in Project Planning and Management
63. Master of Arts in Literature
64. Master of Arts in Linguistics
65. Master of Arts in History
66. Master of Arts in Geography
67. PhD in Food Security and Sustainable Agriculture
68. PhD in Agricultural Extension
69. PhD in Agribusiness Management
70. PhD in Horticulture
71. PhD in Animal Science
72. PhD in Soil Science
73. PhD in Special Needs Education

74. PhD in Religion
75. PhD in Pure Mathematics
76. PhD in Public Health
77. PhD in Plant Taxonomy
78. PhD in Plant Ecology
79. PhD in Planning and Economics of Education
80. PhD in Planning
81. PhD in Physics
82. PhD in Pedagogy
83. PhD in Parasitology
84. PhD in Microbiology
85. PhD in Literature
86. PhD in Linguistics
87. PhD in Information Technology Security and Audit
88. PhD in Information Technology and Management
89. PhD in History
90. PhD in Health Informatics
91. PhD in Guidance and Counseling
92. PhD in Geography
93. PhD in Epidemiology and Biostatistics
94. PhD in Educational Psychology
95. PhD in Educational Administration and Management
96. PhD in Early Childhood Development and Education
97. PhD in Curriculum Studies
98. PhD in Chemistry
99. PhD in Business Information Systems
100. PhD in Business Administration
101. PhD in Applied Statistics
102. PhD in Applied Mathematics
103. PhD in Analytical Chemistry

1.5.2 Total Time for Completing a Lecture/Instruction of Each Programme

List of Programmes	Hours
1. Bachelor of Arts in Spatial Planning	2352
2. Bachelor of Business Administration with IT	2352
3. Bachelor of Education (Arts) with IT	2352
4. Bachelor of Education (Early Childhood Development)	2352
5. Bachelor of Education (Science) with IT	2352
6. Bachelor of Education (Special Needs) Education) with IT	2352
7. Bachelor of International Tourism Management	2352
8. Bachelor of Logistics and Supply Chain Management	2352
9. Bachelor of Science (Business Information Systems)	2352
10. Bachelor of Science (Information Communication Technology)	2352
11. Bachelor of Science in Actuarial Science with IT	2352
12. Bachelor of Science in Agribusiness Management	2352
13. Bachelor of Science in Agricultural Education and Extensions	2352
14. Bachelor of Science in Animal Science	2352
15. Bachelor of Science in Biological Sciences	2352
16. Bachelor of Science in Community Health and Development	2352
17. Bachelor of Science in Computer Security and Forensics	2352
18. Bachelor of Science in Construction Management	2352
19. Bachelor of Science in Food Security	2352
20. Bachelor of Science in Horticulture	2352
21. Bachelor of Science in Public Health	2352
22. Bachelor of Science in Renewable Energy Technology and Management	2352
23. Bachelor of Science in Soil Science	2352
24. Bachelor of Science in Water Resources and Environment Management	2352
25. Master of Science in Food Security and Sustainable Agriculture	720

26. Master of Science in Agricultural Extension	900
27. Master of Science in Agribusiness Management	720
28. Master of Science in Horticulture	720
29. Master of Science in Animal Science	720
30. Master of Science in Soil Science	720
31. Master of Science in Urban Environmental Planning and Management	720
32. Master of Science in Pure Mathematics	720
33. Master of Science in Plant Taxonomy	720
34. Master of Science in Physics	720
35. Master of Science in Parasitology	720
36. Master of Science in Microbiology	720
37. Master of Science in Information Technology Security and Audit	720
38. Master of Science in Information Technology Management	720
39. Master of Science in Information Systems	720
40. Master of Science in Health Informatics	720
41. Master of Science in Epidemiology and Biostatistics	720
42. Master of Science in Ecology	720
43. Master of Science in Biomedical Sciences in Specialization on Medical	720

Entomology, Parasitology, Parasitology or Immunology	
44. Master of Science in Biology	720
45. Master of Science in Applied Statistics	720
46. Master of Science in Applied Mathematics	720
47. Master of Science in Food Security and Sustainable Agriculture	720
48. Master of Science Chemistry	720
49. Master of Public Health in Epidemiology and Disease Control	720
50. Master of Public Health (MPH)	720
51. Master of Logistics and Supply Chain Management	720
52. Master of Education in Planning and Economics of Education	720
53. Master of Education in Pedagogy	720
54. Master of Education in Guidance and Counseling	720
55. Master of Education in Educational Technology	720
56. Master of Education in Educational Psychology	720
57. Master of Education in Curriculum Studies	720
58. Master of Education in Administration and Management	720

59. Master of Education in Early Childhood Development and Education	720
60. Master of Business Administration	720
61. Master of Arts in Religion	720
62. Master of Arts in Project Planning and Management	720
63. Master of Arts in Literature	720
64. Master of Arts in Linguistics	720
65. Master of Arts in History	720
66. Master of Arts in Geography	720
67. PhD in Food Security and Sustainable Agriculture	1,170
68. PhD in Agricultural Extension	1,170
69. PhD in Agribusiness Management	1,170
70. PhD in Horticulture	1,170
71. PhD in Animal Science	1,170
72. PhD in Soil Science	1,170
73. PhD in Special Needs Education	1,170
74. PhD in Religion	1,170
75. PhD in Pure Mathematics	1,170

76. PhD in Public Health	1,170
77. PhD in Plant Taxonomy	1,170
78. PhD in Plant Ecology	1,170
79. PhD in Planning and Economics of Education	1,170
80. PhD in Planning	1,170
81. PhD in Physics	1,170
82. PhD in Pedagogy	1,170
83. PhD in Parasitology	1,170
84. PhD in Microbiology	1,170
85. PhD in Literature	1,170
86. PhD in Linguistics	1,170
87. PhD in Information Technology Security and Audit	1,170
88. PhD in Information Technology and Management	1,170
89. PhD in History	1,170
90. PhD in Health Informatics	1,170
91. PhD in Guidance and Counseling	1,170
92. PhD in Geography	1,170

93. PhD in Epidemiology and Biostatistics	1,170
94. PhD in Educational Psychology	1,170
95. PhD in Educational Administration and Management	1,170
96. PhD in Early Childhood Development and Education	1,170
97. PhD in Curriculum Studies	1,170
98. PhD in Chemistry	1,170
99. PhD in Business Information Systems	1,170
100. PhD in Business Administration	1,170
101. PhD in Applied Statistics	1,170
102. PhD in Applied Mathematics	1,170
103. PhD in Analytical Chemistry	1,170

1.5.3 Definitions

(a) Credit Hours

This is a minimum of three hours of work per week for sixteen weeks in a semester.

(b) Lecture/Instructional Hours

Three hours per week for fourteen weeks under which the students meet with the course instructor.

(c) Contact Hours

One-hour lecture per week per semester or two hour of tutorials/seminars per week per semester, which the instructor meets with the students.

(d) Course Units

A course unit is defined as that part of a semester subject described by coherent syllabus and taught normally over a period of a semester.

1.5.4 Academic organization of the programmes reflecting academic quarters/trimesters/ semesters

(a) The Master's programme will normally take two years undertaken by Coursework, Examination and Thesis. Students shall be required to take two semesters of Coursework in the first year comprising five units per semester. In the second year the students will concentrate on Research and Thesis writing.

(b) Courses shall be offered in units. A course unit is defined as that part of a semester subject described by a coherent syllabus and taught normally over a period of a semester. It is designated as a total of 45 Hours. For this purpose, one 1-hour lecture is equivalent to 2-hour tutorial or 3-hour practical or any combination as may be approved by the Board of the School of Agricultural and Food Sciences.

2. THE CURRICULUM

2.1 Title of the Proposed Programme

Master of Science in Agricultural Commodity Value Chain Management (MACVM)

2.2 Philosophy of the Programme

The Master of Science in Agricultural Commodities Value Chain Management (MACVM) offers application-oriented training to advance efficient and sustainable agricultural value chain management, fostering economic growth in rural and Peri-urban sectors. Our philosophy emphasizes sustainable and inclusive management to enhance productivity and food security.

2.3 Rationale of the Programme

The programme focuses on meeting the urgent demand for specialized application-based knowledge in the management of agricultural value chains. It enhances the transformative growth of agricultural commodities by training experts in strategic decision-making and innovative portfolio development. Collaborations with leading International Higher Education Institutions (HEIs) and private sector organizations for practical training in the programme, guarantee that the skills learned are directly applicable in real-life situations. Additionally, partnerships with international institutions strengthen academic and research connections on a global scale. The programme equips graduates with the knowledge and skills to promote sustainable agricultural growth, facilitate rural development, and contribute to economic prosperity. The training is in accordance with both national laws and policies, as well as international standards. The programme also aligns with national development agendas and global sustainability goals. The national and international policies span various years. They include the National Agricultural Investment Plan (NAIP) and the Agricultural Sector Transformative Growth Strategy (ASTGS) up to 2024, aligning with the BETA, the Comprehensive African Agricultural Development Programme (CAADP), and the United Nations Sustainable Development Goals (SDGs). MACV also adheres to relevant laws such as the Agriculture Act Chapter 318 (Revised Edition 20212), promoting stable agriculture and sustainable land development. Furthermore, MACV aligns with the National Agricultural Sector Extension Policy (NASEP), emphasizing the pivotal role of extension services in agriculture. Lastly, MACV supports the East African Community (EAC) Strategic Interventions plan, fostering regional agriculture and

rural development initiatives.

2.4 Goal of the Programme

The programme will equip students with advanced expertise in application-based agricultural management, preparing them to lead and innovate in the global agricultural industry, while fostering academic collaborations with partner institutions.

2.5 Expected Learning Outcomes of the Programme

On successful completion of the proposed Masters of Science in Agricultural Commodities Value Chain Management the students should be able to:

(i) Evaluate the global range of responsibilities in the management and guidance of agriculture management businesses;
(ii) Appraise the knowledge acquired in agricultural research, agricultural administration, and agricultural service industry for sustainable agricultural value chain development;
(iii) Identify teaching and mentorship responsibilities in vocational education and training and in professional development;
(iv) Explore practical-based experiences and skills for solving problems associated with management through team-work with researchers as well as decision and policy makers;
(v) Assess the implementation of practical interventions for solving problems in agricultural value chain management;
(vi) Characterize Agribusiness ideas and turn them into versatile business ventures for income and wealth creation
(vii) Examine proficient communication strategies for a diverse group of people through oral and written scientific media.

2.6 Mode of Delivery of the Programme

The proposed Masters of Science in Agricultural Commodities Value Chain Management will be delivered in English at JOOUST. Course units will be conducted in the teaching facilities, including lecture halls, laboratories, greenhouses and fieldwork, through interactions in the form of lectures, seminars, laboratory practical, field activities and group discussions. In addition, students will get the opportunity to visit and do part of their graduate programme with other national, regional and

international institutions with which the School of Agricultural and Food Sciences has joint collaborative projects. In this way, students in the master's degree programme can develop their career and gain real world experience in the field of agricultural management. Overall, the Programme shall adopt Blended mode of Delivery which encompass face-to-face and ODEL modes.

2.7 Academic Regulations for the Proposed Programme

2.7.1 Admission Requirements for the Proposed Prgramme

JOOUST criteria for a Master's Degree Programme shall apply:

Candidates wishing to pursue a master's degree programme in Masters of Science in Agricultural Commodities Value Chain Management at Jaramogi Oginga Odinga University of Science and Technology must meet the following requirements:

(i) Holders of at least Second Class Upper Division (Honours) Bachelor's degree in a relevant discipline. This includes but is not limited to Agricultural Sciences, and related courses or equivalent qualification from recognized Universities.

(ii) Holders of Second Class Lower Division (Honours) Degree in a relevant discipline. This includes but is not limited to Agricultural Sciences, and related courses or equivalent qualifications from recognized Universities. The applicant must in addition provide evidence of two years of relevant work experience.

(iii) In addition to the above, applicants must meet the specific requirements of the Master's Programme as provided by the University Senate.

2.7.2 Regulations on Credit Transfer in a Programme

This does not apply according to the university policy.

2.7.3 Course Requirements

This should include all requirements of the course such as:

(a) Student class attendance, and either relevant industrial attachment, or practicum.

(i) The students will be required to attend at least two thirds of lectures and in all the course units to qualify to sit for the final University examinations.

(ii) Students will be required to undertake practical and/or industrial attachment as planned by the course lecturer.

(b) Obligations of the lecturer should entail aspects of course delivery and facilitation.

(i) The lecturer will develop the course outline to be used in delivery of the course.

(ii) The lecturer will deliver the course according to the prescribed mode.

(iii) The lecturer will evaluate the students.

2.7.4 Student Assessment Policy/Criteria

The University policy on teaching and Examinations management shall apply.

(a) Continuous Assessment Tests (CATs):

The ordinary examination shall be graded on the basis of percentage marks consisting of 40% as continuous assessment tests (CATs).

(b) End-Semester:

The student will undertake university examinations. Examinations shall be held at the end of the semester in which the courses are taught. The ordinary examinations shall be graded on the basis of percentage marks consisting of forty per cent (40%) as CATs and 60% as final examinations. Continuous assessment on research shall be reflected in the candidates' progress reports submitted

by the supervisors.

(c) Practical and industrial attachments:

Where practical and/or industrial attachments are offered, students will be assessed as part of the CAT and will contribute 10% of the totals CAT marks.

(d) Other Assessments:

Where research is undertaken in form of a case study or experiment, students will be expected to Submit a report which will be graded as part of the Continuous assessment Test. This will contribute 10% of the total CAT marks.

2.7.5 Grading System

The grading shall be done as follows:

Grade	**Score**
75- 100%	A
65 – 74%	B
50 – 64%	C
Below 50%	F

Designations related to examinations shall be as follows:

P: Pass

I: Incomplete

K: Course in Progress

Au: Audit

a) The passing grade shall be **C = 50%** in each course taken and examined.

b) A candidate who fails a semester examination shall re-sit the same when next offered. If the candidate fails the re-sit examination, he/she shall be discontinued.

c) Marking and grading of the examinations are done by the course instructor who also enters the grade in the Instructors Grade Sheet. The results are then moderated by the relevant Departmental Examination Board (DEB).

d) The scripts are then forwarded to the external examiner who reviews them and returns them to the Chairman, Department of Agriculture Economics and Agribusiness Management.

2.7.6 Examination Regulations

(a) Written Examinations

(i) Examinations for the proposed master's degree programme shall be conducted under the authority of the University Senate as specified under various rules and regulations.

(ii) Examinations shall consist of:

a. Continuous assessment based on assignments, field practical, laboratory practical/industrial attachments and such other tests as the regulations of the Department may prescribe, which shall constitute forty per cent (40%) of the total marks for each course.

b. The final examinations shall constitute sixty per cent (60%) of the total marks for each course.

(iii) Courses which are purely practical and/or seminars may be assessed entirely by continuous assessment.

(iv) Marks obtained in examinations shall be converted into letter grades as follows:

75 % and above	A
65-74%	B
50-64%	C
Below 50 %	F

(v) Resit Examinations

a. A candidate who fails in twenty-five per cent (25%) or less of the total courses taken in an academic year shall be required to Resit examination once only.

b. Candidates shall be awarded grade "C" (50%) in all courses passed in re-sit examination.

(vi) Discontinuation

A student shall be discontinued for:

a. Failing more than twenty-five percent (25%) of the total courses taken in an academic year;
b. Failing a re-sit examination;
c. Committing serious examination malpractice as defined under Section 6.1 of these regulations; and
d. Failing to register for and attend scheduled lectures for two (2) weeks or longer without the consent of the University Senate.

(vii) Special Examinations

a. Special examinations will be offered to candidates who, due to circumstances acceptable to the University Senate, were unable to sit for the ordinary examinations.
b. Special examinations shall be graded on the same guidelines as those for the ordinary examinations
c. No student shall be permitted to proceed to the next year of study without having satisfied all examination requirements.
d. Examination results shall be processed and approved by the School Board of Examiners and submitted to the Board of Postgraduate Studies for ratification before being presented to University Senate by Dean, School of Agricultural and Food Sciences (SAFS)

(b) Thesis

(i) A candidate will proceed to conduct thesis research upon successful completion of the coursework.

(ii) A candidate will be required to identify a research area and write a thesis on original work.

(iii) A candidate shall prepare and write the thesis according to regulations governing postgraduate studies.

(iv) A candidate must defend the thesis according to supervision and examination guidelines as stipulated in the Board of Postgraduate Studies Rules and Regulations.

(c) Supervision

(i) A candidate shall choose a supervisor(s) in consultation with the Dean, School of Agricultural and Food Sciences or Chairman, Department of Agriculture Economics and Agribusiness Management and the Postgraduate Studies Committee. The candidate shall have a minimum of two supervisors – one of whom shall be the major supervisor.

(ii) One of the supervisors may be from outside the University. However, one of the supervisors must be a member of staff of the University.

(iii) The appointment of the supervisors shall be done within six months from the time of registration.

(iv) The appointment shall be done by the Chairman of the University Senate on recommendation by the Chairman of the Postgraduate Studies Committee.

(d) Consultation and Progress on Thesis

(i) A candidate is required to consult with supervisors regularly. The major supervisor shall submit to the Board of Postgraduate Studies and the Dean, School of Agricultural and Food Sciences, a progress report on the candidate each trimester.

(ii) A candidate is required to exhibit steady progress in the coursework and thesis/project work. If the progress is not satisfactory, the Board of Postgraduate Studies through recommendations of the school will warn the student in writing. If a candidate does not show improvement within one trimester after a warning, he/she shall be recommended to Senate for deregistration.

(iii) If a candidate does not receive adequate supervision, the candidate shall write to the Board of Post Graduate Studies explaining inadequacies in supervision, in which case the Board may change the supervisor(s) upon recommendation by the School.

(e) Defense of Thesis or Project Report

(i) The candidate after successful completion of coursework will be expected to write a thesis.

(ii) The final examination of the thesis will be administered as an oral defense. Successful defense qualifies the candidate for graduation.

(iii) The defense will take place only after the candidate has satisfied all other requirements of the programme.

(iv) The Board of Postgraduate Committee shall constitute a Board of Examiners for the thesis. The Board of Examiners shall include:

1. The Dean of the School – Chair
2. The Director or representative – Secretary, Board of Postgraduate Studies
3. The Dean of the School or representative
4. The supervisor(s) as internal supervisors
5. The External Examiner or his/her written report
6. A Senate representative
7. Administrative Officer, Board of Postgraduate Studies, Secretary
8. Other members may attend to listen to the defense but cannot vote on any matter relating to the defense.

(v) The outcome of the defense shall be communicated to the candidate immediately.

(vi) All members of the Board of Examiners shall sign a certificate to indicate whether the candidate has passed, deferred or failed. If a candidate is requested to make some corrections, a certificate of correction shall be issued.

(vii) The final grade for the thesis shall be graded on a PASS or FAIL basis.

(viii) A candidate who fails in the thesis shall be allowed to resubmit the thesis/project within a period of not more than three months, failing which the candidate will be discontinued.

(ix) On passing the final examination, the candidate will be required to submit six (6) copies of the final thesis and then proceed with preparation for graduation.

(f) Programme Evaluation and Change

The proposed Master of Science in Agricultural Commodity Value Chain Management curriculum is dynamic and requires continuous monitoring and evaluation to ensure that it remains relevant, current, competitive and responsive to the needs of the individual students, country and educational sector.

a. The curriculum shall be evaluated every three years or when need arises.

b. Any recommended or proposed changes shall be presented in the School Board meetings.

c. Course and teaching evaluation shall be conducted at least once a year.

d. Evaluation of teaching staff will be conducted through appraisals by students and the Senate. The evaluation of lecturers will be conducted in line with the University Quality Assurance guidelines.

e. Evaluation of students will be conducted through students' examinations.

For quality assurance students shall evaluate their lecturers based on:

a. Degree of preparedness.

b. Presentation of course content (skills) communication.

c. Punctuality in starting and ending classes.

d. Promptness in returning marked assignments.

2.7.7 Moderation of Examinations

The examinations shall be set by internal examiners and moderated by external examiners. Marking of examinations shall also be done by internal examiners and moderated by external examiners before the final moderated result is taken to the Senate for approval. After the results are approved by the Senate, they will become the official examination results of the university.

2.7.8 Graduation Requirements

a) Successful completion of 10 units of coursework.
b) Publish at least one article in a refereed journal.
c) Successful defense of the thesis.
d) Satisfying all other relevant University requirements

2.7.9 Classification of Degrees

The degree is non-classified.

2.7.10 Description of Thesis

(a) Institutional Definition of Thesis:

An essay or dissertation involving personal research, written by a candidate for a college degree.

(b) Rationale of the Thesis

Thesis will demonstrate scholarship through generation and analysis of data for creation of new knowledge in the field of agricultural management and contributions to the global efforts for enhancing food and nutritional security. Capacity of the student to consolidate Thesis is an output of students' research, and will be demonstrated through logical presentation of ideas.

(c) Facets of the Thesis

The thesis will normally consist of the following key sections: Title page, abstract, introduction, literature review, materials and methods, results and discussion, conclusions, recommendations and references.

(d) Regulations of the Thesis/Dissertation/Project

i) A candidate will proceed to conduct thesis research upon successful completion of the coursework.
ii) A candidate will be required to identify a research area and write a thesis on original work.
iii) A candidate shall prepare and write the thesis according to rules and regulations for postgraduate studies.

iv) A candidate must defend the thesis according to supervision and examination guidelines as stipulated in the Rules and Regulations for Postgraduate Studies.

2.7.11 Course Evaluation

Course evaluation should include the procedures of course evaluation and the evaluation of all aspects of the course including:

Course Content

The course content consists of the scope, theories and main topics including emerging issues to be covered in the course unit.

Instructional Process

Student's registration for the units, class attendance, the course outline, delivery of the course (Lectures, practical, case studies, seminars and guest lectures), CATs, setting and marking of examination and internal and external moderation of examinations.

Infrastructure and Equipment

Lecture rooms, Greenhouses, farms, LCD, laboratories, machinery, furniture, and library.

Instructional and Reference Materials

Core textbooks and other books, reference books, journals and e-resources.

Assessments

ISO students' evaluation form in which the students can evaluate the course and the lecturer at the end of the semester. This is conducted by the Office of Quality Assurance and Enhancement.

Internal and external moderation of examinations and internal and external moderation of results is conducted to ensure quality. The programme has an embedded monitoring and evaluation (M & E) that involves both the student and the supervisor.

2.8 Management and Administration

i) The proposed Masters of Science in Agricultural Commodities Value Chain Management Programme is designed to be offered at JOOUST by the School of Agricultural and Food Sciences in collaboration with the other national, regional and international institutions.
ii) In the management of the programme, the School of Agricultural and Food Sciences will supervise the delivery of the proposed programme
iii) Lecturers from the University and partners from other national, regional, and international institutions and networks will provide lectures and monitor progress of students. Where such an approach is inadequate, qualified part time lecturers will be recruited to support the proposed programme. In addition, lecturers from collaborating universities and research institutions both within and outside Kenya, especially from the Consortium Group of Universities, will be engaged in the programme as visiting or exchange staff. Ultimately, this multi-partner and multi- institutional approach to teaching will enhance capacity building at the local level.
iv) The Chairperson, Department of Agriculture Economics and Agribusiness Management in consultation with the Dean, School of Agricultural and Food Sciences shall appoint a qualified Faculty member as the Academic Program Leader.
v) Regular Program review, relevant stakeholders' reviews, departmental and regular School boards, course evaluation, external examiners and moderation during delivery, university policy on quality, CUE standards, ISO standards.

2.9 Courses /Units

The courses/units offered should include:

2.9.1 A distribution table comprising of a summary of the number of courses/units/credit hours/lecture hours allocated to the institution's core courses of the proposed programme, and specialization area of courses

2.9.1.1 Compulsory Courses/Units

Year 1 Semester 1 Internship (Report + Oral Examination)

Course Code	**Course Title**	**Contact Hours**			**Weight (Unit)**
		Lecture	**Internship**	**Total**	
AEB 5101:	Thesis I and Fieldwork Practicum to Agricultural Commodities Value Chain Management	0	225	225	1C
	Total	**0**	**225**	**225**	**1C**

2.9.1.2 Compulsory Courses/Units

Year 1 Semester 2 Introduction and Science of Raw Materials

Course Code	**Course Title**	**Contact Hours**			**Weight (Unit)**
		Lecture	**Practical**	**Total**	
AEB 5111	Food Value Chain Management*	30	15	45	1C
AEB 5112	Research Methods	30	15	45	1C
AFB 5123	Food quality, Safety and Risk Management	30	15	45	IC
AEB 5113	Food processing technology *	30	15	45	IC
AEB 5114	Agripreneurship and product development*	30	15	45	1C
	Total	**150**	**75**	**225**	**5**

KEY: *Compulsory/Common Course Units at each Consortium Partner University

Year 2 Semester 1 Trends and Innovations in Value Chains

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
AEB 5211	Crop, livestock and fish value chain management*	30	15	45	1C
AEB 5212	Sustainability for Commodity and food value chains*	30	15	45	1C
AEB 5213	Agricultural Economics	30	15	45	IC
AEB 5214	Digital technology for Agri-food system*	30	15	45	IC
AFB 5121	Statistical Methods	30	15	45	1C
	Total	**15**	**75**	**225**	**5**

Year 2 Semester 2

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Research	Total	
AEB 5215	Thesis II	0	225	225	1C
	Total	**0**	**225**	**225**	**1C**

A ***matrix*** showing the courses that are covered by each expected learning outcome of the programme and specialization areas. A skeleton of the matrix is hereby provided:

Learning Outcomes	Course Title	YEAR 1	YEAR 2	
Programme Learning Outcomes				
	Courses	**Lecture Hours**	**Courses**	**Lecture Hours**
Gain practical knowledge through fieldwork practicum and conduct preliminary research and proposal development under supervision.	Thesis I and Fieldwork Practicum to Agricultural Commodities Value Chain Management	225		

Explore practical-based experiences and skills for solving problems associated with management through team-work with researchers as well as decision and policy makers;	Thesis I and Fieldwork Practicum to Agricultural Commodities Value Chain Management	225		
Understand management aspects of food value chains, from production to consumption.	Food Value Chain Management	45	Crop, Livestock, and Fish Value Chain Management	45
Evaluate the global range of responsibilities in the management and guidance of agriculture management businesses;	Agricultural Economics	45		
Assess the implementation of practical interventions for solving problems in agricultural value chain management;	Agripreneurship and Product development	45		

Learn about food quality, safety, and risk management in the context of food systems.	Food Quality, Safety, and Risk Management	45		
Acquire knowledge of food processing technology, covering methods, equipment, and industry standards.	Food Processing Technology	45		
Characterize Agribusiness ideas and turn them into versatile business ventures for income and wealth creation	Agripreneurship and Product Development	45		
Appraise the knowledge acquired in agriculture research, agriculture administration, and agriculture service industry for sustainable agricultural value chain development;			Sustainability for Commodity and Food Value Chains	45
Examine proficient communication strategies for a diverse group of people through oral and written scientific			Research Methods Statistical Methods	90

media.				
Understand the role of digital technology in agri-food systems, from precision farming to supply chain management.			Digital Technology for Agri-food Systems	45
Conduct research and produce a thesis under guidance, demonstrating critical thinking and academic writing skills.			Thesis II	225

COURSE OUTLINES

Year 1 Semester 1

AEB 5101:

Course Title: Thesis 1 and Fieldwork Practicum in Agricultural Commodities Value Chain Management

Purpose: The Field Practicum in Agricultural Commodities Value Chain Management is an experiential learning course which is based on hands-on experience and practical skills in managing agricultural commodities throughout the value chain. Students will be required to engage in fieldwork, internships, or industry placements to gain insight into the production, processing, distribution, and marketing of agricultural products, with a view to focusing on value chain optimization and sustainability. This course is designed to develop and enhance students' knowledge and skills to plan independent research and to communicate this in a research proposal and orally to the academic community.

Expected Learning Outcomes

Upon completion of this course, learners will be able to:

1. Analyze Agricultural Value Chains in real world situation

2. Evaluate Production Systems practiced by farmers
3. Assess Post-Harvest Handling Techniques practiced by farmers
4. Optimize Supply Chain Management
5. Identify Market Opportunities in agricultural value chain
6. Implement Quality Assurance in agricultural value chain
7. Address Sustainability Challenges in agricultural value chain
8. Mitigate Risks in farming
9. Communicate Effectively issues of agricultural value chain management
10. Reflect on Fieldwork Experiences
11. Develop a feasible and realistic research concept.

Course content

Fieldwork Engagement - Introduction to Agricultural Commodities Value Chain; Value Chain Mapping and Domestication; Value Chain Governance; Value chain Analysis (Constraint Analysis Matrix): Constraints, Causes, Impact, Intervention Portfolios, and Opportunities; Identification of various agricultural production systems; Evaluation of productivity, efficiency, and sustainability. Post-harvest handling practices, storage techniques, and processing technologies; Evaluation of market trends, consumer preferences, and market opportunities; Identification of strategies to access domestic and international markets; Quality assurance and food safety protocols; Regulatory standards and certification requirements; Sustainability challenges in agricultural commodity value chains; environmental impact assessment, and biodiversity conservation; Assessment and Risk mitigation; Dissemination of findings, oral presentations, written reports; Evaluate fieldwork experiences, learning outcomes, challenges, personal and professional growth; In preparation of the thesis: students will be guided on how to develop a research proposal outlining all aspects of the planned work. The proposals will be discussed in research seminars. The proposal must be approved by the supervisors before planned field work for the thesis can be undertaken. The first part of the course focuses on: Organization of a research project; developing the research question; Literature review and synthesize; understanding the elements of a research proposal; Develop an appropriate and feasible research design; Draft proposals supervised by advisors and the course instructor. Students should expect to work intensively with their advisors during this period.

Instructional Methods

The student will work with the supervisors to dev1`elop the proposal on an agreed topic, theme and title as necessary. The student will maintain at least a two weekly visit and discussion with the supervisor.

Instructional Materials and/or Equipment

The student will use the available referral material and other research materials availed on campus, internet and other sources as directed by the supervisors.

Course Assessment

No marks or grades will be awarded for the thesis proposal. The proposal writing stage will be reported as satisfactory or not satisfactory. The supervisors will consult with each other before advising the student on the performance.

Core Reading Materials for the Course

1. Kornuta, H. M., & Germaine, R. W. (2019). *A concise guide to writing a thesis or dissertation: Educational research and beyond*. Routledge.
2. Science and Technology Facilities Council (2009) "Research Grants Handbook", 09 October 2009. http://www.scitech.ac.uk/rgh/PDFs/rghAll.pdf
3. MLA (2008). Style Manual and Guide to Scholarly Publishing, third edition. Published: ISBN: 9780873522977 (hardcover), ISBN: 9780873522984
4. Galvan, J. L., & Galvan, M. C. (2017). *Writing literature reviews: A guide for students of the social and behavioral sciences*. Routledge.

Recommended Reference Materials

1. Reich, J., Tingley, D., Leder-Luis, J., Roberts, M. E., and Stewart, B. M. (2015). Computer assisted reading and discovery for student generated text in massive open online courses. *Journal of Learning Analytics.*
2. JOOUST Postgraduate Guidelines Handbook.

Course Code: AEB 5111

Course Title: Food Value Chain Management

Purpose of the Course:

The Food Value Chain Management is designed to provide students with a comprehensive understanding of the intricate processes involved in managing the value chain within the food industry. The course will explore key concepts, strategies, and best practices essential for optimizing efficiency, sustainability, and profitability across all stages of the food supply chain.

Expected learning outcomes of the course

Upon completion of this course, learners will be able to:

1. Define and Explain the Food Value Chain.
2. Analyze and Evaluate Value Chain Processes.
3. Apply Strategies for Optimization in food value chain.
4. Utilize Technology and Innovation in food value chain.
5. Assess External Factors and Challenges affecting agricultural food value chain.
6. Make Informed Decisions and Strategic Plans with regard to agricultural value chain management.
7. Communicate Agricultural Value Chain Concepts Effectively.
8. Apply Knowledge to Real-World Scenarios.
9. Demonstrate Ethical and Sustainable Practices.

Course Content:

Introduction to the concept of the food value chain, components of food value chain, including primary production, processing, distribution, and retail. Analysis of the food value chain stages; identifying inefficiencies, bottlenecks, and areas for improvement. Strategies to enhancing efficiency, quality, and sustainability across the food supply chain; management principles, supply chain integration, and sustainability practices. Role of technology and innovation in food value chain management; the applications of IoT, blockchain, and data analytics for streamlining operations and improving traceability. Impact of external factors such as regulations, consumer trends, and globalization on the food value chain, and develop strategies to mitigate risks and capitalize on opportunities. Ethical considerations and sustainability issues within the food value chain and proposal and implementation practices that promote ethical sourcing, environmental responsibility, and social accountability. Emerging trends, technologies, and best practices in food value chain management. Gender dimensions in the food value chain management. Application of theoretical concepts and practical skills learned in the course to analyze real-world case studies,

propose solutions to value chain challenges and opportunities, and make recommendations for improvement.

Instructional Methods:

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, and Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core reading materials:

1. Pullman, Madeleine, and Zhaohui Wu. (2021). *Food supply chain management: building a sustainable future*. Routledge

2. Bourlakis, Michael A., and Paul W H Weightman (2008) eds. *Food supply chain management*. John Wiley & Sons.

3. Eastham, Jane, Liz Sharples, and Stephen Ball. (2007). eds. *Food supply chain management*. Taylor & Francis.

Recommended Reference Materials

1. Pullman, Madeleine, and Zhaohui Wu. (2012). *Food supply chain management: Economic, social and environmental perspectives*. Routledge,

2. Cucagna, Maria Emilia, and Peter D. Goldsmith. (2018): "Value adding in the agri-food value chain." *International food and agribusiness management review* 21.3 293-316.

3. Narula, Sapna A., and S. P. Raj. "Sustainable Food Value Chain Development."

4. Bourlakis, Michael A., and Paul WH Weightman. (2004). "Food Supply Chain Management."

5. Bijman, Jos, et al., (2006). eds. *International agri-food chains and networks: management and organization*. Wageningen Academic Publishers

Course Code: AEB 5112

Course Title: Research Methods

Purpose of the course

The Research Methods course is intended to provide learners with foundational knowledge and practical skills necessary for designing, conducting, and analyzing research across various disciplines. Through a combination of theoretical concepts, practical exercises, and case studies, students will learn about different research methodologies, data collection techniques, and analytical tools used in academic and professional settings. In addition, students will be exposed to scientific writing (including academic, grant concept and proposal writing) and publication skills for effective research and dissemination. The course emphasizes critical thinking, ethical considerations, and the application of research methods to address real-world problems.

Expected Learning Outcomes of the Course

Upon completion of this course, learners will be able to:

1. Demonstrate an understanding of the research process, including formulating research questions and hypotheses.
2. Identify appropriate research designs and sampling techniques for different research contexts.
3. Select and apply relevant data collection methods, such as surveys, interviews, and observational research.
4. Analyze research data using appropriate statistical and qualitative analysis techniques.
5. Evaluate the validity, reliability, and ethical implications of research studies.
6. Develop research proposals and reports that adhere to academic and ethical standards.
7. Communicate research findings clearly and effectively to diverse audiences.

Course content

Introduction to research: the role of research, overview of the research process and basic research concepts; Problems and Hypotheses: defining the research problem, formulation of the research hypotheses and/or questions; Literature review; Research design: experimental and non-experimental research design, field research, and survey research; Methods of data collection; Sampling techniques; Determination of sample size; Processing and analysis of data; Ethical issues in conducting research; Reporting: Introduction, Methodology, Results, Discussion, References, and Appendices. Role and characteristics of research in the development of scientific knowledge; research approaches, Research process; Principles of scientific writing; scientific writing (including academic, grant concept and proposal writing) and publication skills for effective research and dissemination. Quantitative qualitative and mixed methods research; Development of research proposals and thesis reports; Major areas of research in Agricultural Commodity Value

Chain Management: Agricultural information user studies, Access to agricultural data, information, and knowledge, Agricultural information retrieval research; Agricultural information systems research, Agricultural communications research; Communicating Agricultural Commodity Value Chain Management/agricultural research; Collaborative research project management.

Instructional Methods:

The course will be delivered through a combination of lectures, case studies, interactive discussions, e learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%.

Core Reading Materials for the Course

1. Walliman, Nicholas. (2021). *Research methods: The basics*. Routledge.
2. Patten, Mildred L. (2016). *Understanding research methods: An overview of the essentials*. Routledge.
3. Blumberg, Boris, Donald Cooper, and Pamela Schindler. (2014). *EBOOK: Business research methods*. McGraw Hill.
4. Bryman, Alan. (2013). *Research methods and organization studies*. Routledge.
5. Richards, Keith, Steven Ross, and Paul Seedhouse. (2012). *Research methods for applied language studies: An advanced resource book for students*. New York: Routledge.

Recommended Reference Materials

1. Randolph, Justus J. (2008). *Multidisciplinary methods in educational technology research and development*. HAMK Press.
2. Van Dijk, Teun A. (2011). *Discourse studies: A multidisciplinary introduction*. Sage.

3. Tritter, Jonathan. (2007). "Mixed methods and multidisciplinary research in health care." *Researching health: Qualitative, quantitative and mixed methods*.
4. Spencer, Steve, and Gary Taylor (2004). *social identities: Multidisciplinary approaches*. Routledge.

Course Code: AFB 5123

Course Title: Food Quality, Safety, and Risk Management

Course Content: Food Quality, Safety, and Risk Management is a comprehensive course designed to provide students with an in-depth understanding of the principles, practices, and regulations governing the quality and safety of food products. The course explores topics such as food microbiology, hazard analysis, risk assessment, regulatory compliance, and quality assurance systems, equipping students with the knowledge and skills necessary to ensure the production of safe and high-quality food

Expected Learning Outcomes of the course

Upon completion of this course, students will be able to:

1. Understand the Concepts of Food Quality, Safety, and Risk Management
2. Identify and Analyze Food Hazards
2. Apply Hazard Analysis Techniques
3. Evaluate Regulatory Compliance
4. Develop and Implement Quality Assurance Systems
5. Manage Food Safety Incidents and Crises
6. Conduct Risk Assessment and Management
7. Promote Food Safety Culture
8. Implement Traceability and Recall Systems
9. Communicate Effectively on Food Safety Issues
10. Develop skills to investigate problems of substandard food quality
11. Assess the health and safety culture of food processing industry
12. Identify and assess potential risks to health and the environment in the food industry
13. Develop skills for Inspecting different food products (imports or locally produced)

Course Content

Comprehensive information on food safety; Food contamination i.e. microbial, chemical, plant and animal adulterants and radioactive materials; Routes of contamination of major food groups, analysis and control; Fields and concepts of the quality systems of foods; Risk analysis and management of the food chain; Sensory properties of foods and statistical means of quality control; Food standards and regulations; National and international agencies related to food control.

Instructional Methods

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, and Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials for the Course

1. Mohammed K., Rahman P., Ashraf S.A. (2024). *Food Safety: Quality Control and Management*. Taylor & Francis Group. ISBN: 9781032369990, 103236999X
2. Petersen B., Nüssel M. & Hamer M. (2023*). Quality and Risk Management in Agri-food Chains*. Brill. ISBN: 9789086867899, 9086867898
3. Lelieveld H.L.M. & Motarjemi Y. (2018). *Food Safety Management: A Practical guide for the food industry*. Elsevier Science & Technology Books. ISBN: 9780128100189, 0128100184.

Recommended Reference Material

1. Inteaz A. (2004) Food Quality Assurance, Principles and Practices, CRC, First Edition.
2. FAO/WHO, 1996. Proposed draft guidelines for the design, operation, assessment and accreditation of food import and export inspection and certification systems. Sydney, 19 - 23 February. FAO, Rome.

3. FAO/WHO, 1996. Report of the fourth session of the Codex Committee on Food Import and Export Inspection and Certification Systems. ALINORM 97/30. Sydney, 19 – 23 February. FAO, Rome.
4. FAO/WHO, 1995. Report of the twenty-first session of the Joint FAO/WHO Codex Alimentarius Commission. ALINORM 95/37. Rome, 3 - 8 July. FAO, Rome.
5. FAO/WHO, 1995. Report of the twenty-eighth session of the Codex Committee on Food Hygiene. ALINORM 97/13. Washington, D.C., 27 November - 1 December. FAO

Course Code: AEB 5113

Course Title: Food Processing Technology

Purpose of the course

Food Processing Technology explores the principles and practices involved in the transformation of raw agricultural materials into safe, nutritious, and appealing food products. This course covers various aspects of food processing, including unit operations, preservation techniques, quality control, and regulatory requirements.

Expected Course Outcomes

Upon completion of this course, the learners will be able to:

1. Understand Food Processing Principles.
2. Identify and explain Unit Operations.
3. Apply Preservation Methods.
4. Implement Quality Control Measures.
5. Explore Innovation in Food Processing.
6. Operate Food Processing Equipment.
7. Understand Food Packaging.
8. Address Environmental and Sustainability Concerns.
9. Optimize Food Processing Operations.
10. Comply with Regulatory Requirements.
11. Apply Food Processing Knowledge.

Course content:

Fundamental concepts and principles of food processing; role of processing in food safety, preservation, and enhancement of nutritional quality. Operations involved in food processing; cleaning, sorting, grading, heating, and packaging, and their respective roles in food production. Food preservation methods; heat processing, refrigeration, and drying, and application in extending shelf life and maintaining quality of food products. Quality control measures and implementation throughout the food processing chain; monitoring, testing, and maintaining quality parameters. Recent advancements and innovations in food processing technology; emerging technologies (high-pressure processing and nanotechnology), and their applications in food production. Principles of food packaging and its role in preserving food quality and safety, including the selection of packaging materials and technologies. Environmental impacts of food processing operations, sustainable practices to minimize resource consumption, waste generation, and environmental footprint. Optimization of food processing operations through process modeling, simulation, experimentation, and continuous improvement techniques. Regulatory requirements and safety considerations measures in food processing operations, including FDA regulations, food safety standards, and labeling requirements, ensuring compliance with legal and regulatory frameworks. Addressing real-world challenges and opportunities in the food industry; product development, process optimization, and quality assurance. Communicating food processing concepts, findings, and recommendations to diverse stakeholders, including peers, industry professionals, and regulatory authorities. Gender dimensions in food processing.

Instructional Methods

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, and Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials for the Course:

1. Brennan, J. G., & Grandison, A. S. (2012). *Food processing handbook*. Weinheim, Germany: Wiley-Vch.
2. Fellows, Peter John. (2022). *Food processing technology: principles and practice*. Woodhead publishing.
3. Knorr, D. (1999). Novel approaches in food-processing technology: new technologies for preserving foods and modifying function. *Current opinion in biotechnology*, *10*(5), 485-491.
4. Ravichandran, R. (2010). Nanotechnology applications in food and food processing: innovative green approaches, opportunities and uncertainties for the global market." *International Journal of Green Nanotechnology: Physics and Chemistry* 1.2: P72-P96.

Recommended Reference Materials

1. Smith, J. Scott, and Yiu H. Hui, (2008). *Food processing: principles and applications*. John Wiley & Sons.
2. Misra, N. N., et al. (2017). "Landmarks in the historical development of twenty first century food processing technologies." *Food Research International* 97: 318-339.
3. Priyadarshini, A., Rajauria, G., O'Donnell, C. P., & Tiwari, B. K. (2019). Emerging food processing technologies and factors impacting their industrial adoption. *Critical reviews in food science and nutrition*, *59*(19), 3082-3101.
4. Brunner, G. (2005). Supercritical fluids: technology and application to food processing. *Journal of food engineering*, *67*(1-2), 21-33.
5. Marc, Romina Alina, Antonio Valero Díaz, and Guiomar Denisse Posada Izquierdo, (2020). *Food Processing*. BoD–Books on Demand.
6. Stumbo, C. R. (2013). *Thermobacteriology in food processing*. Elsevier.
7. Jain, A., Ranjan, S., Dasgupta, N., & Ramalingam, C. (2018). Nanomaterials in food and agriculture: an overview on their safety concerns and regulatory issues. *Critical reviews in food science and nutrition*, *58*(2), 297-317.

Course Code: AEB 5114

Course Title: Agri-preneurship and Product Development

Purpose of the Course

To equip learners with skills and knowledge to innovate, create, protect and run successful agricultural enterprises.

Expected Learning Outcomes of the Course:

Upon completion of this course, students will be able to:

1. Understand concepts and principles of Agripreneurship.

2. Identify and evaluate opportunities for Agricultural Enterprise and Product Development.

3. Generate and Evaluate Agri-enterprise and Product Ideas.

4. Develop and Prototype Agricultural Products.

5. Market Agricultural Products.

6. Create Business Plans for Agricultural Ventures.

7. Understand the complexities of risk management in agriculture.

8. Gain insights into the legal and regulatory landscape governing agribusiness operations.

9. Analyze Case Studies and Best Practices and apply key insights and lessons to agricultural enterprise and product development.

Course Content

Introduction to Agripreneurship: Definition and importance of agripreneurship and its role in driving innovation and growth in the agricultural sector, Types of entrepreneurship (intrapreneurship, entrepreneurship), Forms of agr-ienterprises for running agribusiness organizations (small, medium, large), Qualities/skills needed for running the business. Identification and generation of business ideas: Sources of new ideas (research, emerging enterprises, market demand, consumer trends, technological advancements, feasibility studies etc, Ideation process (brainstorming, random association, etc), conceptualization, prototyping, Enterprise selection through product validation, market research and feasibility analysis. Process of setting up an enterprise: Legal requirements, Financial and economic requirements, Personnel requirements, Infrastructural requirements, Business location. Enterprise Management: Financial Management, Man-power/Personnel Management; Human Resource Management, change mgt, partner, network and collaborations management within agripreneurship community, Machinery/Production, Materials. Resource mobilization in an enterprise: funding sources, financing options, and investment strategies available to agripreneurs, develop skills in pitching to investors and securing funding for agricultural ventures. Product development: Impetus to product innovation, new product development process. Marketing and Consumer behaviour: Marketing functions, Marketing institutions, Market research (Types of market information, Marketing mix, Marketing strategies, Market segmentation, Distribution channels, Consumer needs, Types of consumers, Exogenous and endogenous influences on the buyer behaviour, Consumer purchasing process. Legal, regulatory, and intellectual property considerations in agripreneurship and product development. Business Plan/Business Canvas model (proposal). Case Studies.

Instructional Methods:

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, and Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials for the Course

1. Jean Vasile, A., Subic, J., Grubor, A., & Privitera, D. (2019). *Handbook of research on agricultural policy, rural development, and entrepreneurship in contemporary economies*. IGI Global.
2. Mungai, C. (2018). Innovative Business Models for Smallholder Farmers: A Case Study of Agricultural Entrepreneurs in Africa. FAO.
3. Kumar, D. (2015). *Entrepreneurship in Agriculture.* Satish Serial Publishing House, 1st edition.
4. Casson, M. (2008). *The Oxford handbook of entrepreneurship*. Oxford University Press.

Recommended Reference Materials

1. Marioti, S. (2007*). Entrepreneurship: How to Start & Operate a Small Business*, 10th Edition. Pearson, pp. 660.
2. Scarborough, N. (2011). *Effective Small Business Management*, 10th Edition. Pearson, pp. 888.
3. Spinelli, S. and Adams, R. (2015). *New Venture Creation: Entrepreneurship for the 21st Century (Irwin Management)*, 10th Edition. McGraw-Hill Education, pp. 512.
4. Sutton, G. (2012). Writing Winning Business Plans: How to Prepare a Business Plan that Investors Will Want to Read and Invest In. RDA Press, LLC, pp. 210.
5. Journal of Research in Marketing and Entrepreneurship. Open Access.

6. Journal of The Handbook of Research on Entrepreneurship in Agriculture and Rural Development. Edited by Gry Agnette Alsose, Sara Carter, Elisabet Ljunggren and Friederike Welter.
7. The Journal of Entrepreneurship

Year 2 Semester 1

Course Code: AEB 5211

Course Title: Crop, Livestock and Fish Value Chain Management

Prerequisite: AEB 5111

Purpose of the Course:

The purpose of this course is to provide learners with practical knowledge and skills in value chain management for crops, livestock, and fish. This will enable them to improve productivity, efficiency, and profitability in the agriculture sector.

Expected Learning Outcomes of the Course:

Upon completion of this course, students will be able to:

1. Understand the concept of value chains and their importance in agriculture.
2. Identify the key components of crop, livestock, and fish value chains.
3. Analyze value chain performance and identify opportunities for improvement.
4. Develop strategies for managing value chains effectively.
5. Demonstrate the ability to apply value chain management principles in real-world scenarios.

Course Content:

Principles of crops, livestock and fisheries production and their supply chains; Processing methods of agricultural products; Post-harvest changes taking place in crop products; Estimating the post-harvest losses in crop products; Types of losses in livestock and fisheries products resulting from poor processing and preservations; Post-harvest and processing facilities for crops, livestock and fisheries products; Estimating the viability of different agricultural products processing techniques; Monitoring and evaluation of safety and quality assurance measures in harvesting, transporting, processing, preserving, storage, grading, packaging, standardization and marketing of agricultural products locally and abroad; Agro-logistics requirements of crops, livestock, and fisheries products; Political, environmental, social, technological, legal, and economic (PESTLE) analysis for crop, livestock and fisheries value chain management. Sustainability and Ethics in Value Chain Management; Environmental considerations in value chains, social responsibility and ethical practices.

Instructional Methods:

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, and Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials for the Course:

1. Black, R. (2019). *Strategic management in the value chain.* Routledge.
2. Gereffi, G. (2017). *Global value chains and development: Redefining the contours of 21st-century capitalism*. Cambridge University Press.
3. Coyle, J. J., Langley, C. J., & Novack, R. A. (2016). *The management of business logistics: A supply chain perspective*. Cengage Learning.

Recommended Reference Materials:

1. Fuglie, K. O., & Rada, N. E. (2013). Resource productivity, competitiveness, and the global food system. *International Food and Agribusiness Management Review, 16*(B).
2. Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard business review, 89*(1-2), 62-77.
3. Talalwe, M., & Morrison, A. (2017). *Effective agricultural supply chain management*. Springer.
4. Christopher, M. (2016). *Logistics & supply chain management*. Pearson UK.
5. Van Der Meer-Kooistra, J., Vosselman, E. G. J., & Ven, B. V. D. (2019). Management control of inter-organizational relationships: *Analysis of a new flexible organizational form*. Springer.
6. Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of international political economy, 12*(1), 78-104.

Course Code: AEB 5212

Course Title: Sustainability for Commodity and Food Value Chains

Purpose of the Course

The purpose of this course is to equip participants with the knowledge and skills necessary to address the critical challenges facing commodity and food value chains in the context of sustainability. Through a multidisciplinary approach, the course aims to explore the intricate interplay between environmental, social, and economic factors within these chains, fostering a deeper understanding of sustainable practices, supply chain management, and ethical considerations. By examining case studies, industry best practices, and emerging trends, participants will develop strategies to promote resilience, reduce waste, enhance transparency, and create value across the entire value chain, ultimately contributing to the creation of more sustainable and equitable systems within the global commodity and food sectors**.**

Expected Learning Outcomes

Upon completion of this course, learners will be able to:

1. Define Sustainability and its relevance
2. Identify Environmental Impacts
3. Analyze Social Impacts of Agricultural Value Chains.
4. Examine Sustainable Practices affecting Agricultural sector
5. Assess Certification Standards Agricultural sector
6. Integrate Sustainability into Management of Agricultural Value Chains.
7. Understand Consumer and Retailer Perspectives Agricultural Value Chains.
8. Analyze Policy and Governance and their impacts on Agricultural Value Chains.
9. Explore Emerging Trends and Innovations in Agricultural Value Chains.
10. Apply Sustainability Assessment Tools on Agricultural Value Chains.
11. Develop Solutions for Sustainability of Agricultural Value Chains.

Course Content:

Introduction to Sustainability and Food Systems: Definition of sustainability, overview of the food value chain, and importance of sustainable food production. Sustainable Energy and the Food Value Chain: Exploring energy consumption in agriculture, greenhouse gas emissions from food systems, production of solar, wind, and biomass energy in agriculture, and energy-efficiency in production, processing, and transportation. Sustainable Practices in the Food Value Chain: Covering agroecology, organic farming techniques, water usage, and pollution in food production, precision agriculture, smart farming technologies, cold chain management and food preservation, and sustainable packaging and distribution systems. Food Waste Reduction and Resource Management: Discussing causes and consequences of food waste, strategies for reducing food loss and waste, and resource recovery and circular economy approaches. Ethical and Social Considerations in Food Production: Addressing fair trade and ethical sourcing, labor rights and

social justice in agriculture, environmental standards, cost-benefit analysis of sustainable practices, and market incentives for sustainability. Case Studies and Best Practices: Identifying cases where sustainable food production has been practiced, and incorporating assignments such as excursions and seminars/paper presentations.

Instructional Methods

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, Simulation software for supply chain management and food processing

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials

1. Developing Sustainable Food Value Chains: Guiding Principles (2024). FAO.
2. Terry Marsden, Adrian Morley, and Fiona Morgan. (2014). *Sustainable Food Systems: Building a New Paradigm.* Routledge.
3. Margaret A. Oliver, Thomas F.A. Bishop and Ben P. Marchant (2013). *Precision Agriculture for Sustainability and Environmental Protection.* Routledge.

Recommended Reading Materials

1. Sustainable Supply Chain Management: Practical Ideas for Moving Towards Best Practice" by David B. Grant and Alexander Trautrims
2. Food Supply Chain Management and Logistics: From Farm to Fork" by Ioannis Minis and Vasileios Zeimpekis.
3. The New Food Activism: Opposition, Cooperation, and Collective Action" by Alison Alkon and Julie Guthman.
4. Sustainability in Food Supply Chain Management" edited by Usha Jindal.
5. Developing sustainable food supply chains. Philosophical Transactions of the Royal Society B: Biological Sciences, 363 (1492): 849–861.

6. https://openknowledge.fao.org/server/api/core/bitstreams/35fc8778-32c8-49e9-8b54-e923cdd07647/content

Course Code: AEB 5213

Course Title: Agricultural Economics

Course Purpose

The program is designed for graduates to acquire knowledge and skill for problem solving applications for up-scaling agricultural productivity, value chain management and enhanced marketing of agricultural products on both small and large-scale farms.

Expected Learning Outcomes of the course

Upon completion of this course, students will be able to:

1. Understand the Foundations of Agricultural Economics
2. Analyze Factors Influencing Agricultural Production
3. Evaluate Market Structures and Pricing Mechanisms
4. Assess Agricultural Policy Impacts on Agricultural value chains
6. Explore International Trade in Agriculture
7. Apply Economic Modeling and Analysis Techniques
8. Critically Examine Sustainability in Agriculture
9. Communicate Economic Concepts Effectively
10. Engage in Interdisciplinary Approaches
11. Apply Economic Principles to Real-World Agricultural Issues

Course content

The scope of the course unit include - Introduction: The subject matter of Agricultural Economics, The nature of Agricultural systems, The role of Agriculture in Economic Development, Influence of Agriculture in Poverty Reduction and Economic Development, Emerging perspectives in Agricultural Development (Paradigm Shifts); Agricultural Production Theory: Economics of Agricultural Production, Overview of Production Functions, The Profit Maximization (and duality – cost minimization), Efficiency in Resource Use, and Allocation, Behaviour under Risk and Uncertainty; Supply Response: Output Supply Functions, Estimation Methods (nature of Farm household decision making), Categories of Models, Empirical Applications and Case studies; Status of Science and Technology Policy in Agriculture: Technology transformation in Agriculture, Technology Transfer Pathways and Intellectual Property Rights, Enhanced Investment in Agricultural Science and Technology Advancement in Africa; Policy Analysis Matrix: Rationale and Objectives of Agricultural Policy, Policy Making processes, Identification of Stakeholders in Agricultural Policy making, Approaches to Agricultural Policy Analysis, Policy Reforms and Modernization in the Agricultural Sector in Africa, Food Policy Analysis; Contributions of Infrastructure and Rural Institutions to Agricultural Development: Land Markets and Tenure Systems, Communication Systems; Market Infrastructure; Agricultural Commodities Value Chain Analysis: Mapping and Domestication of the Chain Actors, Governance,

Coordination and Distribution along the Value Chain, Improved Efficiency for Profit Maximization, The role of international trade in agricultural economics and its implications for global food security.

Instructional Methods

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, and Simulation software for supply chain management and food processing.

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Material

14. Kengo D. M. et. al (2021). Agriculture and Economic Development. *International Journal of Agriculture* Vol. 6 No. 1

15. Kenneth A. Reinert (2022). *Introduction to International Economics*, 2nd Edition: New Perspectives of the World Economy

16. John W. Mellor. (2017). *Agricultural Development and Economic Transformation: Promoting Growth with Poverty Reduction* (Palgrave Studies in Agricultural Economics and Food Policy) 1st Ed. Edition

Recommended Reference Materials

1. Reed, M.M. (2016). *International Trade in Agricultural products.* Prentice Hall
2. Norton, G.W., Alwang J. and Masters, W.A. (2014*). Economics of Agricultural Development: World Food System and Resource Use* (3rd Edition), New York Routledge
3. Hopkin P. (2017). *Fundamentals of Risk Management: Understanding, Evaluating, and Implementing Effective Risk Management*, 4th Edition. The Institute of Risk Management, New York USA
4. H. German. (2015). *Agricultural Finance: From Crop to Land, Water and Infrastructure*. John Wiley and Sons, West Sussex, England

5. T.Y. Sawyer. (2014). Financial Modelling for Business Owners and Entrepreneurs: Developing Excel Models to Raise Capital, Increase Cash Flows, Improve Operations, Plan Projects and Make Decisions. Apress.
6. Journal of Agricultural Policy. https://carijournals.org/shop/journal-agricultural-policy/
7. International Journal of Agricultural Policy and Research. https://journalissues.org/ijapr/
8. Food Policy. https://www.journals.elsevier.com/food-policy
9. American Journal of Agricultural Economics. https://onlinelibrary.wiley.com/journal/14678276
10. European Review of Agricultural Economics. https://academic.oup.com/erae
11. Journal of Agrarian Change. https://onlinelibrary.wiley.com/journal/1471036
12. Applied Economic Perspectives and Policy. https://onlinelibrary.wiley.com/journal/20405804
13. Global Food Security. https://www.journals.elsevier.com/global-food-security
14. Journal of Agriculture & Food Information. https://www.tandfonline.com/toc/wafi20/current

Course Code: AEB 5214
Course Title: Digital Technology for Agri-food Systems

Purpose of the Course:

The purpose of this course is to provide learners with cutting-edge knowledge and practical skills in applying digital technologies in the agri-food sector, fostering innovation, sustainability, and efficiency in agricultural practices and food systems across Africa. Learners will be prepared to drive digital transformation in agriculture, enhance food security, and contribute to economic development while addressing the challenges posed by climate change.

Expected Learning Outcomes of the Course:

Upon completion of this course, learners will be able to:

1. Understand the role of digital technologies in modern agri-food systems.
2. Analyze the impact of digital innovations on agricultural practices and food production.
3. Evaluate the benefits and challenges of adopting digital technologies in agri-food systems.
4. Demonstrate proficiency in utilizing various digital tools for farming, supply chain management, and food processing.
5. Develop strategies for integrating digital technologies into agricultural and food businesses.

Course Content:

Introduction to Digital Technologies in Agri-food Value Chain Systems; Overview of digital technologies in agriculture, Digital transformation in agri-food systems, Challenges and

opportunities in African agriculture Data Science and Analytics for Agri-food Value Chain Systems; Principles of data science in agri-food value chain systems, Remote sensing and GIS for precision agriculture, Big data analytics and its application in crop forecasting and pest management, IoT and Sensor Technologies in Agri-food Value Chain Systems; Introduction to IoT and sensors in farming, Design and deployment of sensor networks for soil, climate, and crop monitoring, Data management and analysis for informed decision-making, Smart Farming and Precision Agriculture; Principles of precision agriculture, Digital tools and technologies for site-specific crop management, Case studies: Success stories of precision farming, Agricultural Robotics and Automation; Overview of robotics in agriculture, Drones in crop monitoring and spraying, Autonomous tractors and robotic harvesters, Blockchain for Traceability in the Agri-Food Chain; Introduction to blockchain technology, Applications of blockchain for food safety and traceability, Case studies on blockchain adoption in agri-food systems, Digital Extension Services and Farmer Digital Literacy; Digital platforms for agricultural extension services, Strategies for enhancing digital literacy among farmers, Role of mobile technologies in reaching remote farmers, Digital Platforms for Market Access and Agri-Finance, Digital marketplaces for enhancing access to markets for smallholder farmers, Digital financial services (DFS) in agriculture: Opportunities and challenges, The role of mobile technology in providing agricultural advisory services, Innovation and Entrepreneurship in Agri-Tech; Ecosystem for agri-tech startups, Funding and scaling agri-tech solutions, Policy and regulatory environment for agri-tech innovation

Instructional Methods

The course will be delivered through a combination of lectures, case studies, interactive discussions, e learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Demonstrations of digital farming equipment and sensors, Simulation software for supply chain management and food processing

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials for the Course:

1. Zhang, Q., Li, B., & Wang, L. (2018) *Precision Agriculture Technology for Crop Farming.* CRC Press

2. Klerkx, L., Jakku, E., & Labarthe, P. (2019) *A review of social science on digital agriculture, smart farming and agricultural innovation systems.* Elsevier Publications
3. Schroeder K., Lampietti J. and Elabed G. (2021). *What is cooking: Digital Transformation in Agri-Food Systems.* World Bank Publications.
4. Wolfert, S., Ge, L., Verdouw, C., & Bogaardt, M.-J. Y (2017) *Big Data in Smart Farming*. Elsevier Publications.
5. Lioutas, E. D., & Charatsari, C. (2020) *Smart Farming and Sustainable Agriculture.* Springer Publications.

Recommended Reference Materials:

1. Gelb, E., & Maru, A. (2018) *ICT in Agriculture: Perspectives of Technological Innovation.* World Bank Publications
2. Wong, K.-C., Zhang, D., & Jiang, T. (2017). *Big Data Analytics in Genomics.* Elsevier
3. Chatterjee, J. M., & Das, D. (2019). *Internet of Things in Agriculture*. The New Frontier. Publisher.
4. Singh, U. K., & Agrawal, D. P. (2016). *Wireless Sensor Networks for Agriculture.* CRC Press.
5. Zhang, Q., & Zhu, H. (2019). *Precision Agriculture Technology for Crop Farming.* CRC Press
6. Kumar, A., & Mishra, A. (2013). *Smart Farming Technologies for Sustainable Agricultural Development.* Springer Publisher.
7. Zhang, D., Li, Y., & Patnaik, S. (2014). *Robotics in Agriculture and Forestry.* Elsevier Publications.
8. Tapscott, D., & Tapscott, A. (2017). *Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World.* Elsevier Publisher.
9. Fredriksson, T. (2008). *Digital Technologies for Agricultural and Rural Development in the Global South.* Springer Publications.
10. Arner, D. W., Barberis, J., & Buckley, R. P. (2004). *Digital Finance: The New Frontier.* Springer Publications..
11. Koller, M. (2006). *Digital Marketing in the Food Sector.* CRC Press
12. Bronson, K.(2019). Looking through a responsible innovation lens at uneven engagements with digital farming. *NJAS - Wageningen Journal of Life Sciences*. Vol 90-91.Pgs: 90-94
13. Van der Burg, S., Bogaardt, M.-J., & Wolfert, S. (2019). Ethics of smart farming: Current questions and directions for responsible innovation towards the future. *NJAS - Wageningen Journal of Life Sciences.*Volume: 90-91Pages: 100289
14. Wolfert, S., Ge, L., Verdouw, C., & Bogaardt, M.-J. (2017). Big Data in Smart Farming - A review *Agricultural Systems Journal,* Vol 153 Issue 15 Pages 69-80

Course Code: AFB 5121

Course Title: Statistical Methods

Purpose of the course

Statistical Methods is a foundational course designed to introduce students to the principles and techniques of statistical analysis. The course covers a range of statistical methods commonly used in research and data analysis across various disciplines. Students will learn how to apply statistical techniques using statistical software (e.g. SPSS, R, STATA, and Python) for data analysis to summarize data, make inferences, and draw conclusions, preparing them for further study and research in their respective fields.

Expected Learning Outcomes of the Course

Upon completion of this course, students will be able to:

1. Understand Fundamental Statistical Concepts
2. Apply Descriptive Statistics
3. Analyze Probability Distributions
4. Perform Statistical Inference
5. Conduct Parametric and Nonparametric Tests
6. Utilize Correlation and Regression Analysis
7. Design and Evaluate Experiments
8. Apply Sampling Methods
9. Utilize Statistical Software
10. Critically Evaluate Statistical Findings

Course content

Organization, description and presentation of data; Design of experiments and surveys; Random variables, probability distributions, the binomial, Poisson, and the normal distributions; Statistical inference, tests of significance, confidence intervals; Inference for means and proportions, one-sample tests, two independent samples, paired data, t-tests, contingency tables; Analysis of variance and covariance; correlation analysis (Pearson and Spearman), Linear regression, least squares estimation, residuals and data transformations, Inference for regression coefficients, prediction, sampling, statistical computing skills and data management using statistical software (e.g. SPSS, R, STATA, and Python) for data analysis.

Instructional Methods

The course will be delivered through a combination of lectures, case studies, interactive discussions, e-learning and hands-on practical sessions. Guest speakers from the industry and field visits to agri-tech companies may also be included.

Instructional Materials/ Equipment:

PowerPoint presentations, Textbooks, Access to online platforms and digital tools for interactive sessions, Simulation software for supply chain management and food processing

Course Assessment:

CATS	40%
Final Examination	60%
Total	100%
Pass mark	50%

Core Reading Materials for the Course

1. Panter A.T. and Sonya K. Sterba. (2011). *Handbook of Ethics in Quantitative Methodology*. New York, NY: Routledge
2. C.Y. Joanne Peng. (2009). *Data Analysis Using SAS*. Los Angeles, CA: SAGE,
3. Leonard C. Onyiah. (2009). *Design and Analysis of Experiments: Classical and Regression Approaches with SAS*. Boca Raton, LA: CRC
4. Bartholomew D J., Steele, F., IriniMoustaki, and Jane Galbraith. (2008). *Analysis of Multivariate Social Science Data,* 2nd edition. Boca Raton, FL: CRC Press

Recommended Reference Materials

1. Menard, SW. (2002). *Applied Logistic Regression Analysis*, 2nd edition. Thousand Oaks, CA: Sage Publications
2. George Henry Dunteman and Moon-Ho R. Ho. (2006*). Introduction to Generalized Linear Models*. Thousand Oaks, CA: Sage Publication.
3. EunSul L and Ronald N. (2006). *Analyzing Complex Survey Data,* 2nd edition. Thousand Oaks, CA: Sage Publications.

Year 2 Semester 2

AFB 5221: Research Thesis II

Purpose of the course

This course is designed to enhance students' capacity to conduct independent field research and to communicate this in a research thesis and orally to the target community

Expected Learning Outcomes of the Course

Upon completion of the course the students should be able to:

1. Apply relevant designs for the process of research in agricultural commodity value chain management.

2. Conduct independent research for contribution to the body of knowledge in agricultural commodity value chain management.
3. Identify appropriate skills to effectively communicate research to target audience

Course Content

This course offers a capstone experience in which students conduct a research project and produce a thesis in a field related to their area of study. With guidance from an academic mentor, the student will conduct primary and secondary research which includes an academic literature search, research design, data analysis and discussion. The course allows the student to undertake advanced level research and produce a substantial piece of writing which advances knowledge in the selected field of research.

Instructional methods

The student will work with the supervisors to develop the proposal on an agreed topic, theme and title as necessary. The student will maintain at least a two weekly visit and discussion with the advisor

Instructional Materials and/or Equipment

The student will use the available referral material and other research materials availed on campus, internet and other sources as directed by the supervisors.

Course Assessment

No marks or grades will be awarded for the thesis proposal.

The proposal writing stage will be reported as satisfactory or not satisfactory. The supervisors will consult with each other before advising the student on the performance observed.

Core Reading Materials for the Course

1. Smith, I., & Felix, M. S. (2019). *A practical guide to dissertation and thesis writing*. Cambridge Scholars Publishing.

2. Committee on the Conduct of Science, National Academy of Sciences. (1995). On Being a Scientist. Washington, D.C.: National Academy Press. Also downloadable in pieces at https://books.nap.edu/books/0309051967/html/index.html
3. BBSRC (2009) "BBSRC Research Grants: The Guide", Research, Innovation and Skills Directorate BBSRC August 2009. http://www.bbsrc.ac.uk/funding/apply/grants_guide.pdf
4. Science and Technology Facilities Council (2009) "Research Grants Handbook", 09 October 2009. https://www.scitech.ac.uk/rgh/PDFs/rghAll.pdf

Recommended Reference Materials

1. Murray R. (2017). *How to write a thesis.* McGraw-Hill Education (UK)
2. Eco, U. (2015). *How to write a thesis*. MIT Press.

Appendix I: Facilities

Item		**Number**	**Capacity in (sq. m) and no. of students**	**Usage**	
				Specific to Department	**Shared**
Conference Halls		1	100		√
Lecture Room/Lecture Theatres		16	50	4	
Lecture Theatre	Auditorium	1	1000		√
	Assembly Hall	1	800		
Lecturer's Offices		20	20	4	
Postgraduate Research Laboratories		1	20		√
Library		1	400		√
Postgraduate Seminar room		1	15		√
Computer Lab		2	40		2
Studios		1	10		√
Examination rooms		2	5		√
Admissions Office		1	7		√
Academic leader's offices		2	4		√
Insect repository		1	20		√
Insect farm		1			√
Board of postgraduate office		3	6		√
Internet Access points		8	800		√

4.2 Appendix II: Equipment and Teaching Materials

Item	Type	Number	Capacity	Usage	
				Specific to Department	Shared
Desk Top Computers (PCS)	HP	480	60	50	430
Laptops/Note Books	HP	22		2	20
Projectors Power Point-Projectors	Epson, Sony, Benq	22		3	19
Smart boards	Smart	4		0	√
Scanner	HP, Kyocera	10			10
Printers	HP, Kyocera	80		2	78
Computer Software	Win 7, 8, 10				√
	Jaws				√
	Ms Office				√
	ARC GIS software				√
	ERDAS				√
Others(specify)	Wireless network	8	30 bandwidth		√
	LAN	8			√

Appendix III: Core-texts and journals

S/No	Subject Area	No. of Titles	Volumes	Journals (No. of titles)	Remarks
1.	Thesis I and Fieldwork Practicum to Agricultural Commodities Value Chain Management	**Core Reading Materials for the Course** 5. Kornuta, H. M., & Germaine, R. W. (2019). *A concise guide to writing a thesis or dissertation: Educational research and beyond*. Routledge. 6. Science and Technology Facilities Council (2009) "Research Grants Handbook", 09 October 2009.			

		http://www.scitech.ac.uk/rgh/PDFs/rghAll.pdf 7. MLA (2008). Style Manual and Guide to Scholarly Publishing, third edition. Published: ISBN: 9780873522977 (hardcover), ISBN: 9780873522984 8. Galvan, J. L., & Galvan, M. C. (2017). *Writing literature reviews: A guide for students of the social and behavioral sciences*. Routledge. **Recommended Reference Materials** 3. Reich, J., Tingley, D., Leder-Luis, J., Roberts, M. E., and Stewart, B. M. (2015). Computer assisted reading and discovery for student generated text in massive open online courses. *Journal of Learning Analytics.* 4. JOOUST Postgraduate Guidelines Handbook.	3		
2.	Food Value Chain Management	**Core reading materials:** 4. Pullman, Madeleine, and Zhaohui Wu. (2021). *Food supply chain management: building a sustainable future*. Routledge 5. Bourlakis, Michael A., and Paul W H Weightman (2008) eds. *Food supply chain management*. John Wiley & Sons. 6. Eastham, Jane, Liz Sharples, and Stephen Ball. (2007). eds. *Food supply chain management*. Taylor & Francis. **Recommended Reference Materials** 12. Pullman, Madeleine, and Zhaohui Wu. (2012). *Food supply chain management: Economic, social and environmental perspectives*. Routledge,			

		13. Cucagna, Maria Emilia, and Peter D. Goldsmith. (2018): "Value adding in the agri-food value chain." *International food and agribusiness management review* 21.3 293-316. 14. Narula, Sapna A., and S. P. Raj. "Sustainable Food Value Chain Development." 15. Bourlakis, Michael A., and Paul WH Weightman. (2004). "Food Supply Chain Management." 16. Bijman, Jos, et al., (2006). eds. *International agri-food chains and networks: management and organization*. Wageningen Academic Publishers,			
3.	Agricultural Economics	**Core Reading Material** 17. Kengo D. M. et. al (2021). Agriculture and Economic Development. *International Journal of Agriculture* Vol. 6 No. 1 18. Kenneth A. Reinert (2022). *Introduction to International Economics*, 2nd Edition: New Perspectives of the World Economy 19. John W. Mellor. (2017). *Agricultural Development and Economic Transformation: Promoting Growth with Poverty Reduction* (Palgrave Studies in Agricultural Economics and Food Policy) 1st Ed. Edition. 20. T.Y. Sawyer. (2014). Financial Modelling for Business Owners and Entrepreneurs: Developing Excel Models to Raise Capital, Increase Cash Flows, Improve Operations, Plan Projects and Make Decisions. Apress. **Recommended Reference Materials** 21. Reed, M.M. (2016). *International Trade in Agricultural products.* Prentice Hall. 22. Norton, G.W., Alwang J. and Masters, W.A. (2014). *Economics of Agricultural Development: World*			

		Food System and Resource Use (3rd Edition), New York Routledge 23. Hopkin P. (2017). *Fundamentals of Risk Management: Understanding, Evaluating, and Implementing Effective Risk Management*, 4th Edition. The Institute of Risk Management, New York USA 24. H. German. (2015). *Agricultural Finance: From Crop to Land, Water and Infrastructure*. John Wiley and Sons, West Sussex, England Journal of Agricultural Policy. https://carijournals.org/shop/journal-agricultural-policy/ International Journal of Agricultural Policy and Research. https://journalissues.org/ijapr/ 3.FoodPolicy. https://www.journals.elsevier.com/food-policy 4.American Journal of Agricultural Economics. .https://onlinelibrary.wiley.com/journal/14678276 5.European Review of Agricultural Economics. https://academic.oup.com/erae 6.Journal of Agrarian Change. https://onlinelibrary.wiley.com/journal/1471036 7.Applied Economic Perspectives and Policy. https://onlinelibrary.wiley.com/journal/20405804 8.Global Food Security. https://www.journals.elsevier.com/global-food-security 9. Journal of Agriculture & Food Information. https://www.tandfonline.com/toc/wafi20/current			

4	Food quality, Safety and Risk Management	**Core Reading Materials for the Course** 1. Hathaway, S. C. (1993). Risk assessment procedures used by the Codex Alimentarius Commission and its subsidiary and advisory bodies. ALINORM 93/97. Codex Alimentarius Commission. Geneva, 28 June - 7 July. FAO, Rome. 2. Inteaz A. (2004) Food Quality Assurance, Principles and Practices, CRC, First Edition. 3. FAO/WHO. (1995). Application of risk analysis to food standards issues. Report of the Joint FAO/WHO Expert Consultation. Geneva, 13 - 17 March. WHO, Geneva. 4. FAO/WHO. (1995). Codex Alimentarius Commission: Procedural Manual. (Ninth Editin). FAO, Rome. 5. FAO/WHO, (1996). Report of the twelfth session of the Codex Committee on general principles. Paris, 25 - 28 November. ALINORM 97/33. Codex Alimentarius Commission. FAO, Rome. 6. FAO/WHO, (1995). Statements of principle concerning the role of science in the codex decision-making process and the extent to which other factors are taken into account. **Recommended Reference Materials**			

		1. FAO/WHO, 1996. Proposed draft guidelines for the design, operation, assessment and accreditation of food import and export inspection and certification systems. Sydney, 19 -23 February. FAO, Rome. 2. FAO/WHO, 1996. Report of the fourth session of the Codex Committee on Food Import and Export Inspection and Certification Systems. ALINORM 97/30. Sydney, 19 – 23 February. FAO, Rome. 3. FAO/WHO, 1995. Report of the twenty-first session of the Joint FAO/WHO Codex Alimentarius Commission. ALINORM 95/37. Rome, 3 - 8 July. FAO, Rome. 4. FAO/WHO, 1995. Report of the twenty-eighth session of the Codex Committee on Food Hygiene. ALINORM 97/13. Washington, D.C., 27 November - 1 December. FAO			
5.	Food processing technology	**Core Reading Materials for the Course:** 5. Brennan, J. G., & Grandison, A. S. (2012). *Food processing handbook*. Weinheim, Germany: Wiley-Vch. 6. Fellows, Peter John. (2022). *Food processing technology: principles and practice*. Woodhead publishing. 7. Knorr, D. (1999). Novel approaches in food-processing technology: new technologies for preserving foods and modifying function. *Current opinion in biotechnology*, *10*(5), 485-491.			

		8. Ravichandran, R. (2010). Nanotechnology applications in food and food processing: innovative green approaches, opportunities and uncertainties for the global market." *International Journal of Green Nanotechnology: Physics and Chemistry* 1.2: P72-P96. **Recommended Reference Materials** 8. Smith, J. Scott, and Yiu H. Hui, (2008). *Food processing: principles and applications*. John Wiley & Sons. 9. Misra, N. N., et al. (2017). "Landmarks in the historical development of twenty first century food processing technologies." *Food Research International* 97: 318-339. 10. Priyadarshini, A., Rajauria, G., O'Donnell, C. P., & Tiwari, B. K. (2019). Emerging food processing technologies and factors impacting their industrial adoption. *Critical reviews in food science and nutrition*, *59*(19), 3082-3101. 11. Brunner, G. (2005). Supercritical fluids: technology and application to food processing. *Journal of food engineering*, *67*(1-2), 21-33. 12. Marc, Romina Alina, Antonio Valero Díaz, and Guiomar Denisse Posada Izquierdo, (2020). *Food Processing*. BoD–Books on Demand. 13. Stumbo, C. R. (2013). *Thermobacteriology in food processing*. Elsevier. 14. Jain, A., Ranjan, S., Dasgupta, N., & Ramalingam, C. (2018). Nanomaterials in food and agriculture: an overview on their safety concerns and regulatory issues. *Critical reviews in food science and nutrition*, *58*(2), 297-317.			

6.	Agripreneurship and product development	**Core Reading Materials for the Course** 5. Jean Vasile, A., Subic, J., Grubor, A., & Privitera, D. (2019). *Handbook of research on agricultural policy, rural development, and entrepreneurship in contemporary economies*. IGI Global. 6. Mungai, C. (2018). Innovative Business Models for Smallholder Farmers: A Case Study of Agricultural Entrepreneurs in Africa. FAO. 7. Kumar, D. (2015). *Entrepreneurship in Agriculture*. Satish Serial Publishing House, 1st edition. 8. Casson, M. (2008). *The Oxford handbook of entrepreneurship*. Oxford University Press. **Recommended Reference Materials** 8. Marioti, S. (2007*). Entrepreneurship: How to Start & Operate a Small Business*, 10th Edition. Pearson, pp. 660. 9. Scarborough, N. (2011). *Effective Small Business Management*, 10th Edition. Pearson, pp. 888. 10. Spinelli, S. and Adams, R. (2015). *New Venture Creation: Entrepreneurship for the 21st Century (Irwin Management)*, 10th Edition. McGraw-Hill Education, pp. 512.			

		11. Sutton, G. (2012). Writing Winning Business Plans: How to Prepare a Business Plan that Investors Will Want to Read and Invest In. RDA Press, LLC, pp. 210. 12. Journal of Research in Marketing and Entrepreneurship. Open Access. 13. Journal of The Handbook of Research on Entrepreneurship in Agriculture and Rural Development. Edited by Gry Agnette Alsose, Sara Carter, Elisabet Ljunggren and Friederike Welter. 14. The Journal of Entrepreneurship			
7.	Crop, livestock and fish value chain management	**Core Reading Materials for the Course:** 4. Black, R. (2019). *Strategic management in the value chain.* Routledge. 5. Gereffi, G. (2017). *Global value chains and development: Redefining the contours of 21st-century capitalism*. Cambridge University Press. 6. Coyle, J. J., Langley, C. J., & Novack, R. A. (2016). *The management of business logistics: A supply chain perspective*. Cengage Learning. **Recommended Reference Materials:** 7. Fuglie, K. O., & Rada, N. E. (2013). Resource productivity, competitiveness, and the global food system. *International Food and*			

		Agribusiness Management Review, 16(B). 8. Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard business review, 89*(1-2), 62-77. 9. Talalwe, M., & Morrison, A. (2017). *Effective agricultural supply chain management*. Springer. 10. Christopher, M. (2016). *Logistics & supply chain management*. Pearson UK. 11. Van Der Meer-Kooistra, J., Vosselman, E. G. J., & Ven, B. V. D. (2019). Management control of inter-organizational relationships: *Analysis of a new flexible organizational form*. Springer. 12. Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of international political economy, 12*(1), 78-104.			
8.	Sustainability for Commodity and food value chains	**Core Reading Materials** 4. Developing Sustainable Food Value Chains: Guiding Principles (2024). FAO. 5. Terry Marsden, Adrian Morley, and Fiona Morgan. (2014). *Sustainable Food Systems: Building a New Paradigm.* Routledge. 6. *Margaret A. Oliver, Thomas F.A. Bishop and Ben P. Marchant* (2013). *Precision Agriculture for Sustainability and Environmental Protection.* Routledge. **Recommended Reading Materials** 7. Sustainable Supply Chain Management: Practical Ideas for Moving Towards Best Practice" by David B. Grant and Alexander Trautrims			

		8. Food Supply Chain Management and Logistics: From Farm to Fork" by Ioannis Minis and Vasileios Zeimpekis. 9. The New Food Activism: Opposition, Cooperation, and Collective Action" by Alison Alkon and Julie Guthman. 10. Sustainability in Food Supply Chain Management" edited by Usha Jindal. 11. Developing sustainable food supply chains. Philosophical Transactions of the Royal Society B: Biological Sciences, 363 (1492): 849–861. 12. https://openknowledge.fao.org/server/api/core/bitstreams/35fc8778-32c8-49e9-8b54-e923cdd07647/content			
9.	Research Methods	**Core Reading Materials for the Course** 6. Walliman, Nicholas. (2021). *Research methods: The basics*. Routledge. 7. Patten, Mildred L. (2016). *Understanding research methods: An overview of the essentials*. Routledge. 8. Blumberg, Boris, Donald Cooper, and Pamela Schindler. (2014). *EBOOK: Business research methods*. McGraw Hill. 9. Bryman, Alan. (2013). *Research methods and organization studies*. Routledge. 10. Richards, Keith, Steven Ross, and Paul Seedhouse. (2012). *Research methods for applied language studies: An advanced resource book for students*. New York: Routledge. **Recommended Reference Materials**			

		1. Randolph, Justus J. (2008). *Multidisciplinary methods in educational technology research and development*. HAMK Press. 2. Van Dijk, Teun A. (2011). *Discourse studies: A multidisciplinary introduction*. Sage. 3. Tritter, Jonathan. (2007). "Mixed methods and multidisciplinary research in health care." *Researching health: Qualitative, quantitative and mixed methods*. 4. Spencer, Steve, and Gary Taylor (2004). *social identities: Multidisciplinary approaches*. Routledge.			
10.	Digital technology for Agri-food system	**Core Reading Materials for the Course:** 6. Zhang, Q., Li, B., & Wang, L.(2018) *Precision Agriculture Technology for Crop Farming.* CRC Press 7. Klerkx, L., Jakku, E., & Labarthe, P. (2019) *A review of social science on digital agriculture, smart farming and agricultural innovation systems.* Elsevier Publications 8. Schroeder K., Lampietti J. and Elabed G. (2021). *What is cooking: Digital Transformation in Agri-Food Systems.* World Bank Publications. 9. Wolfert, S., Ge, L., Verdouw, C., & Bogaardt, M.-J. Y (2017) *Big Data in Smart Farming*. Elsevier Publications. 10. Lioutas, E. D., & Charatsari, C. (2020) *Smart Farming and Sustainable Agriculture.* Springer Publications. **Recommended Reference Materials:**			

		1. Gelb, E., & Maru, A. (2018) *ICT in Agriculture: Perspectives of Technological Innovation.* World Bank Publications 15. Wong, K.-C., Zhang, D., & Jiang, T. (2017). *Big Data Analytics in Genomics.* Elsevier 16. Chatterjee, J. M., & Das, D. (2019). *Internet of Things in Agriculture*. The New Frontier. Publisher. 17. Singh, U. K., & Agrawal, D. P. (2016). *Wireless Sensor Networks for Agriculture.* CRC Press. 18. Zhang, Q., & Zhu, H. (2019). *Precision Agriculture Technology for Crop Farming.* CRC Press 19. Kumar, A., & Mishra, A. (2013). *Smart Farming Technologies for Sustainable Agricultural Development.* Springer Publisher. 20. Zhang, D., Li, Y., & Patnaik, S. (2014). *Robotics in Agriculture and Forestry.* Elsevier Publications. 21. Tapscott, D., & Tapscott, A. (2017). *Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World.* Elsevier Publisher. 22. Fredriksson, T. (2008). *Digital Technologies for Agricultural and Rural Development in the Global South.* Springer Publications. 23. Arner, D. W., Barberis, J., & Buckley, R. P. (2004). *Digital Finance: The New Frontier.* Springer Publications.. 24. Koller, M. (2006). *Digital Marketing in the Food Sector.* CRC Press 25. Bronson, K.(20190 Looking through a responsible innovation lens at uneven engagements with digital farming. *NJAS - Wageningen Journal of Life Sciences.* Vol 90-91.Pgs: 90-94 26. Van der Burg, S., Bogaardt, M.-J., & Wolfert, S. (2019). Ethics of smart farming: Current questions and directions for responsible innovation			

		towards the future. *NJAS - Wageningen Journal of Life Sciences.*Volume: 90-91Pages: 100289 27. Wolfert, S., Ge, L., Verdouw, C., & Bogaardt, M.-J. (2017). Big Data in Smart Farming - A review *Agricultural Systems Journal,* Vol 153 Issue 15 Pages 69-80			
11.	Statistical Methods	**Core Reading Materials for the Course** 5. Panter A.T. and Sonya K. Sterba. (2011). *Handbook of Ethics in Quantitative Methodology*. New York, NY: Routledge 6. C.Y. Joanne Peng. (2009). *Data Analysis Using SAS*. Los Angeles, CA: SAGE, 7. Leonard C. Onyiah. (2009). *Design and Analysis of Experiments: Classical and Regression Approaches with SAS.* Boca Raton, LA: CRC 8. Bartholomew D J., Steele, F., IriniMoustaki, and Jane Galbraith. (2008). *Analysis of Multivariate Social Science Data*, 2nd edition. Boca Raton, FL: CRC Press **Recommended Reference Materials** 4. Menard, SW. (2002). *Applied Logistic Regression Analysis*, 2nd edition. Thousand Oaks, CA: Sage Publications 5. George Henry Dunteman and Moon-Ho R. Ho. (2006*). Introduction to Generalized Linear Models*. Thousand Oaks, CA: Sage Publication. 6. EunSul L and Ronald N. (2006). *Analyzing Complex Survey Data,* 2nd edition. Thousand Oaks, CA: Sage Publications.			
12.	Research Thesis II	**Core Reading Materials for the Course** 5. Smith, I., & Felix, M. S. (2019). *A practical guide to dissertation and*			

		thesis writing. Cambridge Scholars Publishing. 6. Committee on the Conduct of Science, National Academy of Sciences. (1995). On Being a Scientist. Washington, D.C.: National Academy Press. Also downloadable in pieces at https://books.nap.edu/books/0309051967/html/index.html 7. BBSRC (2009) "BBSRC Research Grants: The Guide", Research, Innovation and Skills Directorate BBSRC August 2009. http://www.bbsrc.ac.uk/funding/apply/grants_guide.pdf 8. Science and Technology Facilities Council (2009) "Research Grants Handbook", 09 October 2009. https://www.scitech.ac.uk/rgh/PDFs/rghAll.pdf **Recommended Reference Materials** 3. Eco, U. (2015). *How to write a thesis*. MIT Press. 4. Murray, R. (2017). *How to write a thesis*. McGraw-Hill Education (UK).			

Appendix IV

LIST OF ACADEMIC STAFF AND QUALIFICATIONS

S/No.	Name	Grade	Qualification	Specialization
1	Prof. Christopher O. Gor- Course Leader	Associate Professor	PhD	Agricultural Economics
2	Prof. Stephen Gaya Agong	Professor	PhD	Horticulture
3	Prof. Dennis Ochuodho	Professor	PhD	Ecology
4	Prof. Reuben O. Mosi	Professor	PhD	Animal Breeding
5	Prof. Monica A. Ayieko	Emeritus	PhD	Consumer Economics
6	Prof. Adrian W. Mukhebi	Emeritus Professor	PhD	Agricultural Economics
7	Prof. Maria Onyango	Associate Prof.	PhD	Entrepreneurship Development
8	Prof. Arnold O. Watako	Associate Professor	PhD	Horticulture
9	Prof. Darius O. Andika	Associate Professor	PhD	Environmental Horticulture
10	Prof. Felix Ngetich	Associate Prof.	PhD	Soil Science
11	Prof. Erick Okuto	Associate Prof.	PhD	Statistics
12	Dr. Michael Nyagol	Senior Lecturer	PhD	Economics
13	Dr. Mary Orinda – Deputy Course Leader	Senior Lecturer	PhD	Agribusiness Management
14	Dr. ArvinLucy Onditi	Senior Lecturer	PhD	Marketing
15	Dr. Dorothy Onyango	Senior Lecturer	PhD	Food Technology
16	Dr Edwins Baraza	Senior Lecturer	PhD	Business Administration
17.	Dr. Vitalis Mogwambo	Senior Lecturer	PhD	Finance
18.	Dr. Calleb O. Olweny	Senior Lecturer	PhD	Plant Breeding and Biotechnology
19.	Dr. Peter Bulli	Senior Lecturer	PhD	Plant Genetics
20.	Dr. Elijah Museve	Senior Lecturer	PhD	Finance
21.	Dr. Alice N. Muriithi	Lecturer	PhD	Horticulture
22.	Dr. Walter Akuno	Lecturer	PhD	Agricultural Extension
23.	Dr. Lydia Nyambok	Lecturer	PhD	Agricultural, Environmental

				and Food Economics
24.	Dr. Matilda Ouma	Lecturer	PhD	Agricultural and Rural Innovation
25.	Dr. Romana Mbinya	Lecturer	PhD	Agricultural Extension
26.	Prof. Barack Owuor	Adjunct	PhD	Crop Science
27.	Prof. Chris Ojiewo	Adjunct	PhD	Seed Systems
28.	Prof. William Ogara	Adjunct	PhD	Plant Science

4.5 Appendix V: University Procedures on Curriculum Design and Review

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

DOCUMENT : PROCEDURE FOR CURRICULUM DESIGN AND REVIEW

DOC. NO : JOOUST/AA/OP 10

AUTHORIZED BY : VICE-CHANCELLOR SIGN:

ISSUED BY : DEPUTY VICE-CHANCELLOR SIGN:

ACADEMIC AFFAIRS

0.1 DOCUMENT DISTRIBUTION

S. NO	TYPE	OFFICE
(ii)	Copy	VC

(iii)	**Copy**	**DVC, AA**
(v)	**Copy**	**Principal, Deans, Directors and CoDs**

0.2 DOCUMENT CHANGES

DATE	CHANGES	AUTHORIZED BY
……	……	……..

1.0 Purpose: To ensure effective curriculum design and review for academic programmes in JOOUST

2.0 Scope: It covers effective design, development, review and implementation of

3.0 References: 4.1 ISO 9001:2015 Standard

4.3 KEBS Academic Quality Standards

4.5 JOOUST Statutes

4.0 Abbreviations/Acronyms and Definitions

4.1 JOOUST: Jaramogi Oginga Odinga University of Science and Technology

4.2 CUE Commission for University Education

4.2 QMR: Quality Management Representative

4.3 VC: Vice-Chancellor

4.4 DVC AA: Deputy Vice-Chancellor, Academic Affairs

4.5 RAA: Registrar Academic Affairs

4.6 COD: Chairman of Department

4.7 Curriculum: The academic content of a given programme.

4.8 School Board: Decision organ in a School or Faculty with similar

4.9 Senate Top academic organ of the University

5.0 Principal responsibility: DVC AA shall be responsible for the implementation of this procedure.

6.0 Method

6.1 Dean/CoD shall ensure collection and collation of interested parties views on the need to design new curriculum every two years or/and as need arise.

6.2 Dean/CoD shall ensure collection and collation of interested parties views on the need to review existing programmes which have been implemented for a full cycle or/and as need arise.

6.3 Dean/CoD shall ensure interested parties views are collected using appropriate data collection methods such as surveys, administration of questionnaires, interested parties forums, media contacts, research reports, commissioned studies, customer feedback among others.

6.4 The Dean/CoD shall ensure collected and collated views are used to design new or review the existing programme.

6.5 The Dean/CoD shall present the proposed new/reviewed programmes to the School/Departmental Boards for consideration and recommendation.

6.6 The Dean shall forward the new/reviewed programme to DVC, AA for tabling in the Deans Committee.

6.7 The Dean shall present the proposed new/reviewed programme to the Deans Committee for consideration and recommendation.

6.8 The DVC, AA shall present the proposed new/reviewed programme to the Senate for consideration and approval.

6.9 The VC shall forward the approved programme to the Commission for University

Education (CUE) and/or professional body for accreditation.

6.10 If the programme is not approved at any stage, it shall be reverted to the proposer to incorporate and implement the views/decisions as suggested.

6.11 The VC shall communicate the decision of the CUE and/or professional body to the

DVC, AA

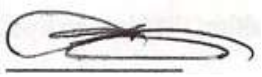
6.12 The DVC, AA shall communicate the results to the Dean/CoD.

1.13 The Dean/CoD shall mount the new/revised programme if accredited.

4.6 Appendix VI: University Procedures on Teaching

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

DOCUMENT: **PROCEDURE FOR TEACHING**
DOC. NO: **JOOUST/VC/AA/OP 12**

AUTHORIZED BY : VICE-CHANCELLOR **SIGNATURE:** 

ISSUED BY : DEPUTY VICE-CHANCELLOR **SIGNATURE:** 

ACADEMIC AFFAIRS

0.1 DOCUMENT DISTRIBUTION

S. NO	TYPE	OFFICE
ii.	Copy	VC
iii.	Copy	DVC, AA

0.2 DOCUMENT CHANGES

DATE	CHANGES	AUTHORIZED BY
……..	……..	……..

…….. …… ……..

…..... ……... ……..

1.0 Purpose:

To ensure effective teaching.

2.0 Scope :

It covers all aspects of teaching in the University.

3.0 References:

i. ISO 9001:2015 Standard ii.
JOOUST Quality Manual iii.
JOOUST Statutes

iv. JOOUST Service Charter

v. Statutory & Regulatory Requirements vi.

JOOUST Student Rules & Regulations

4.0 Abbreviations /Acronyms and Definition of terms:

i. **CoD:** Chairperson of Department

iii. **JOOUST**: Jaramogi Oginga Odinga University of Science and Technology

v. **R (AA):** Registrar, Academic Affairs

vii. **VC:** Vice-Chancellor

5.0 Responsibility: DVC, AA shall be responsible for the implementation of this procedure.

6.0 Method

6.1 Course Distribution

6.1.1 The Dean/CoD shall convene a School/Departmental board meeting to allocate courses to lecturers at least one month before the beginning of each Semester.

6.1.2 School/Departmental Board shall recommend engagement of part-time lecturers for courses where there are shortfalls in full time staff at least three

weeks before the beginning of each Semester.

6.1.3 The Dean shall forward part-time lecturer requirements to the DVC,AA for processing of appointments.

6.2 Course Outline

6.2.1 The lecturer shall develop and submit the course outline to the Dean/CoD for approval two weeks to the beginning of the semester.

6.2.2 The lecturer shall ensure course outline contains the Course title, code, objectives, subject matter, mode of evaluation and references.

6.2.3 The lecturer shall distribute duly approved course outline to the students at the beginning of lectures.

6.3 Delivery of Lectures

6.3.1 The Timetabling Coordinator shall forward teaching time table to the Schools/departments and post the same on the student's notice boards at the beginning of each semester.

6.3.2 The lecturer shall give the lecture and/or administer practical lessons as timetabled

6.3.3 The lecturer shall administer an attendance register in each session.

6.3.4 Lecturer shall ensure all the practical lessons are performed according to the relevant procedures.

6.4 Evaluation

Class Attendance

6.4.1 The R,AA shall develop and distribute a standard class attendance register to

Schools/Departments at least one week before the lectures begin.

6.4.2 The lecturer shall submit the duly filled registers and analysis monthly to the Dean/CoD

6.4.3 The Dean/CoD shall submit the analysis to R, AA two weeks before examinations for necessary action. (Refer to **JOOUST/AA/R/OP 13**: Procedure for Examinations).

Course Evaluation

6.4.4 The Director Quality Enhancement and Assurance shall develop and distribute course evaluation forms to the Deans/CoD two weeks to the beginning of examinations.

6.4.5 SA shall administer the forms to the students.

6.4.6 School Administrators shall submit the duly filled forms to the Director Quality Enhancement and Assurance through the Deans/CoD at the end of each semester.

6.4.7 The Director QEA shall analyse the forms, compile a report and submit it to the VC for action.

Examination

6.4.8 The lecturers shall administer Continuous Assessment Tests (CATs) and end of semester examination as per *procedure **JOOUST/AA/R/OP 13**: Procedure for Examinations*

4.7 Appendix VII: University Procedures on Management of Examinations

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

DOCUMENT : PROCEDURE FOR MANAGEMENT OF EXAMINATIONS DOC.

NO : JOOUST/AA/R /OP 11

AUTHORIZED BY : DEPUTY VICE-CHANCELLOR SIGN: .....

ACADEMIC AFFAIRS

ISSUED BY : REGISTRAR SIGN: .....

ACADEMIC AFFAIRS

0.1 DOCUMENT DISTRIBUTION

S. NO	TYPE	OFFICE
ii.	Copy	VC
iii.	Copy	DVC AA
v.	Copy	Principal, Deans and Directors (v)

0.2 DOCUMENT CHANGES

DATE	CHANGES	AUTHORIZED BY
…….	…….	…….…….
……..	……..	……..……

1.0 Purpose: To ensure proper, efficient and effective process for managing examinations.

2.0 Scope: It covers the administration of examinations, issuance of examination results and academic transcripts and certificates.

3.0 References:

i. ISO 9001:20015 Standard
ii. ii. JOOUST Quality Manual iii. JOOUST Statutes
iii. JOOUST Service Charter
iv. JOOUST Examination Policy

v. JOOUST Examination Rules and Regulations

4.0 Abbreviations /Acronyms and Definition of terms

i **CoD:** Chairperson of Department.
ii **Dean**: Head of School
iii **DVC, AA:** Deputy Vice Chancellor, Academic Affairs
iv **EO:** Examination Office
v **JOOUST**: Jaramogi Oginga Odinga University of Science and Technology
vi **QMR**: Quality Management Representative
vii **R,AA:** Registrar Academic Affairs
viii. **VC:** Vice-Chancellor

5.0 Responsibility:

R, AA shall be responsible for the implementation of this procedure**.**

6.0 Method

6.1 Setting examinations

week before commencement of the semester.

after commencement of the Semester.

6.1.2.1 Course lecturers shall forward examination question papers in soft and hard copies and marking Schemes to the Deans a week after receiving the notice.

6.2 Appointment of External Examiners

1.2.1 Deans shall identify External Examiners and forward their names to R,AA, one week after commencement of semester.

1.2.2 R,AA shall table the names of External Examiners at Deans Committee for discussion one month after commencement of the semester.

1.2.3 Deans Committee shall recommend to Senate the names of External Examiners for appointment.

1.2.4 DVC, AA shall table the names at Senate for approval one week after the Deans Committee meeting.

6.2.5 DVC, AA shall prepare and release appointment letters to External examiners within one week after Senate approval.

6.3 Moderation

6.3.1 Deans shall organize for internal moderation one week after receiving the examinations.

6.3.2 Deans shall forward internally moderated examination question

papers to External Examiners for further moderation one week after internal moderation.

6.3.4 Deans shall receive back moderated examination papers from the External Examiners one week after moderation.

6.3.5 Deans shall submit the externally moderated examination question papers (both soft and hard copies) to R,AA within one week after receiving them from the External Examiners.

6.4 Examination Processing

6.4.1 R,AA shall oversee the printing, collation, stapling and packaging of the examinations.

6.4.2 R,AA shall ensure safe and proper storage of examination question papers.**6.5 Registration for Examinations**

6.5.1 R,AA shall prepare registration schedules

6.5.2 R,AA shall release a circular to students informing them of the examination registration dates at least five weeks before the start of examinations.

6.5.3 R,AA shall register students at least four weeks before the start of examination

6.5.4 R,AA shall issue examination cards to fully registered students.

6.5.5 Teaching and Examination Time-Table Coordinator shall release examination time-tables to students and invigilators at least two weeks before the examinations begin.

6.6 Examination Security

6.6.1 R,AA shall receive examination question papers from the Deans at least five weeks before the examinations begin.

6.6.2 R,AA shall register and pack individual examination question papers and store them in a

secure safe.

6.7 Conduct and Invigilation of Examinations

6.7.1 RAA shall coordinate and supervise the conduct of examinations.

6.7.1 EO shall release examinations to Chief Invigilators at least half an hour before the start of all respective examinations.

6.7.2 Invigilators shall administer examination attendance registers during each session and ensure that all students have legitimate examination cards.

6.7.3 Invigilators shall supervise the students while writing the examinations.

6.7.4 The invigilator shall forward the students examination scripts to the course lecturer.

6.8 Marking of Examinations

6.8.1 Course lecturers shall mark the examinations within two weeks after the end of examinations.

6.8.2 Course lecturers shall forward the marksheets, scripts and marking schemes to the Deans of

Schools within two weeks after the end of the examinations

6.9 Processing Examination Results

6.9.1 Director, Quality Assurance and Enhancement shall invite External Examiners for moderation of examination results one week after the end of marking.

6.9.2 External Examiners shall moderate results and forward their reports to the VC immediately after moderation.

6.9.3 CoDs shall convene Departmental Boards of Examiners to consider the results one week after external moderation.

6.9.4 Deans shall convene School Boards of Examiners to discuss the results one week after receiving results from Departmental Boards.

6.9.5 Deans shall forward provisional results to Deans Committee for consideration and recommendation to Senate.

6.9.6 DVC,AA shall forward provisional results to Senate for final approval.

6.9.7 DVC,AA shall release provisional results after Senate's approval.

6.9.8 Deans shall issue provisional academic transcripts to students two weeks after approval of results by Senate.

6.9.9 DVC,AA shall release final transcripts to students within two weeks after graduation.

6.10 Examination Irregularities, Leakage, Remarking

Invigilators/Lecturers shall handle irregularities, leakages and remarking as provided for in the Student Rules and Regulations.

6.11Replacement of Transcripts

6.11.1 The student shall pay requisite fees and fill in a transcript replacement form.

6.11.2 RAA shall receive the dully filled form and forward to respective Deans for recommendation within two days of receipt.

6.11.3 RAA shall inform the students within three days to collect their transcripts.

6.11.4 Students shall sign a transcript receiving form.

APPENDIX VIII: NEEDS ASSESSMENT REPORT

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

ERASMUS CHAIN PROJECT

REPORT ON THE ERASMUS NEEDS ASSESSMENT FIELDWORK

REPORT COMPILED BY

MR. SAMUEL OHANGA

PROJECT MANAGER

EXECUTIVE SUMMARY

The Erasmus CHAIN project conducted comprehensive needs assessment fieldwork between Thursday, 7th December, and Wednesday, 29th December 2023 in eight Kenyan counties, namely Siaya, Kisumu, Kericho, Homa Bay, Migori, Bungoma, and Busia. The project aimed to understand the challenges faced by farmers and stakeholders in the agricultural value chain, with a focus on training, postgraduate education, and curriculum innovation. The findings are synthesized below:

KEY FINDINGS:

1. Regional Specifics:

- **Unique Agricultural Characteristics:** Each county exhibited unique agricultural challenges. For instance, Kisumu faced issues related to inadequate infrastructure, whereas Kericho grappled with rocky terrain and poor network coverage.

2. Postgraduate Education:

- **Dissatisfaction with Training:** Stakeholders expressed dissatisfaction with the quality of training and caliber of graduates in agriculture-related disciplines across various institutions.

3. Curriculum Recommendations:

- **Practical Training:** Stakeholders recommended an increased emphasis on practical, hands-on training, including extended farm internships to bridge the gap between theoretical knowledge and real-world application.

- **Innovation and Technology:** Integration of innovative modules, including digital agriculture and precision farming, was suggested. Collaboration with industry professionals for insights and guest lectures was deemed essential.

4. Industry Collaboration:

- **Enhanced Partnerships:** Stronger collaboration between educational institutions and agricultural industries was recommended to align curricula with the evolving needs of the sector. Continuous follow-up activities during student attachments were emphasized.

5. Entrepreneurial Skills:

- **Business and Entrepreneurship:** Participants stressed the importance of incorporating entrepreneurship and business skills into the curriculum. Understanding and optimizing value chains were seen as critical for preparing students for diverse roles in the agricultural sector.

6. Common Challenges:

- **Language Barrier:** Across counties, enumerators encountered challenges related to a language barrier during data collection, affecting effective communication with farmers.

- **Weather Conditions:** Adverse weather conditions, particularly heavy rains, posed challenges during fieldwork, impacting the movement of enumerators.

Recommendations:

1. Curriculum Enhancement:

- **Practical Emphasis:** Educational institutions should prioritize practical training, including extended internships, to provide students with hands-on experience.
- **Innovation Integration:** Curricula should be updated to include innovative modules, focusing on technology, digital agriculture, and entrepreneurship.

2. Industry-Academia Collaboration:

- **Partnership Development:** Educational institutions should foster stronger partnerships with agricultural industries, facilitating guest lectures, workshops, and continuous collaboration.

3. Standardization and Certification:

- **Standardized Curriculum:** A standardized curriculum for agriculture-related courses is recommended to ensure consistency and quality across institutions.
- **Certification Programs:** Consideration of certification programs, such as through a professional agriculture body, to ensure graduates meet industry standards.

4. Youth Involvement:

- **Encouragement of Clubs:** Encouraging 4k clubs and farmers' clubs at the primary and secondary school levels can nurture a passion for agriculture among the youth.

CONCLUSION:

The Erasmus CHAIN project unveiled valuable insights into the challenges faced by farmers and stakeholders in the Kenyan agricultural sector. The findings underscore the need for a holistic approach to curriculum development, emphasizing practical skills, technological integration, and collaboration between academia and industry. Standardization of curricula and certifications, along with youth engagement initiatives, are crucial for fostering sustainable growth in the agricultural sector.

The project expresses gratitude to all participants, enumerators, and stakeholders for their contributions, and recommends that these findings guide future initiatives aimed at enhancing agricultural education and sustainable development in Kenya.

APPENDIX IX: STAKEHOLDER'S REPORT

STAKEHOLDERS REPORT ON CURRICULUM DEVELOPMENT MEETING HELD ON 20TH TO 22ND MAY 2024 AT WIGOT GARDENS HOTEL, KISUMU

List of Stakeholders:

1. Dr. Chrispine Omondi, - KALRO
2. Mr. Isaac Munyendo, - County Government of Siaya – Ministry of Agriculture, Livestock and Fisheries
3. Mr. John Odidi, - Farmer in Agricultural Extension, Animal Health and Production, and Horticulture
4. Prof. Mathews M Dida – Maseno University – Plant Breeding and Genetics

Review of MSc. Programme on Agricultural Value Chain Management

We reviewed the programme including the course contents. In overall the proposed programme looked well done. However, we suggest the following to help improve the course structure and content.

1. AEB 5213: In this course a section should be dedicated to scientific writing and presentations.
2. AEB 5114: Agripreneurship and Product development.

The purpose of the course should be revised to: To equip learners with skills and knowledge to create, **protect** innovations and run successful agricultural enterprises.

3. AEB 5112: Agricultural Economics. The content may need to be relooked at. The content appears heavy in content such as Economics, Farm management, Policy and rural management etc.
4. AEB 5113: In course contents, repackage the last sentence on gender dimensions in food processing.
5. AEB 5212: Sustainability for Commodity and Food Value Chains

Please, align the course content and title or vice versa.

6. AEB 5214: Digital Technology for Agri-food Systems

The content has suit of the current new technologies. It should be emphasized that locally available resources or appropriate technologies should be emphasized.

7. AFB 5121: Statistical Methods

There is no mention of use or proficiency in use of Statistical software (e.g. SSPS, R, SAS, etc). These need to be infused into the content.

SOUTH EASTERN KENYA UNIVERSITY

SCHOOL OF AGRICULTURE ENVIRONMENT WATER AND NATURAL RESOURCES

DEPARTMENT OF AGRICULTURAL SCIENCES

REGULATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN FOOD VALUE CHAIN MANAGEMENT

AUGUST 2024

Approved:

Name: _____ **Signature:** _____

Vice Chancellor **Date:** _____

TABLE OF CONTENTS

1.0 GENERAL INFORMATION OF SOUTH EASTERN KENYA UNIVERSITY

1.1 Vision and Mission

Vision

To be a globally competitive center of excellence in teaching, research, innovation and service

Mission

To provide quality education through teaching, research, extension, innovation and entrepreneurship with emphasis on agriculture, natural resources and environmental management.

1.2 Philosophy

South Eastern Kenya University is transforming lives and improving the environment from arid to green through innovative teaching, research and community service.

1.3 University Admission Requirements

1.3.1 Minimum Entry Requirements for a Master of Science degree

1. The following shall be eligible for registration for the master's degrees in the University:
   a) Holder of a Bachelor's degree of the South Eastern Kenya University;
   b) A candidate who has obtained a degree or an equivalent qualification from other institutions recognized by Senate as of comparable academic status;
   c) Relevant academic Bachelor's degree holders from institutions recognized by SEKU Senate:
      i. Upper second class honours or a cumulative Grade Point Average (GPA) of 3.00 on scale of 4.00;
      ii. Lower second class honours or a cumulative Grade Point Average GPA) of 2.50 on scale of 4.00 with additional evidence of research capability either through research, paper presentation or peer reviewed publications and relevant two (2) years working experience.
   d) Relevant postgraduate diploma.
2. In addition to producing evidence of eligibility for registration, candidates for the Masters degree may be required to appear for interview by the School concerned to determine their suitability for registration.

1.3.2 Other admission requirements

3. Subject to the approval of Senate, Schools may formulate regulations requiring applicants to have attained such academic or equivalent qualifications as may be consistent with the goals of their masters programmes.

1.3.3 Procedure for application to the University

The following steps are followed when admitting students for an academic programme:

a. The Academic Registrar requests for programmes to be advertised from the Deans of schools and Directors.
b. Upon approval by the Vice Chancellor, the Academic Registrar advertises the respective programmes.
c. Interested applicants are issued with student application form – **SEKU/ARI/REG/005** upon payment of the required application fee.
d. The completed application forms are submitted to the Academic Registrar.
e. Applications are forwarded to respective schools for evaluation and short-listing.
f. The recommendations of the schools are considered and approved by Dean's committee.
g. The Admissions office prepares and issues letters of offer and Joining Instructions to applicants.
h. Applications must be accompanied with a letter of recommendation
i. The University Senate determines opening and closing dates for receiving applications.

1.4 Academic Resources

These resources will be shared among other programmes in the University.

1.4.1 Facilities and equipment

a) Lecture Rooms

The university has adequate lecture rooms and Laboratories which are well equipped with chairs, white boards, and are well-lit, ventilated and accessible by people living with disabilities. The lecturers use white board markers, erasers and projectors in lecturing. Podiums are provided for the lecturers.

b) Library

i. **Mandate and Policy**

The university has well-established library whose core mandate is to provide quality information resources and services that cater for various needs of all academic programme offered at the University. These resources are easily accessible to all the students and staff within the main and satellite campuses. The University Library operations and

management are guided by an approved Library Policy that incorporates the provisions of the Commission of University (CUE) Standards and Guidelines of 2014.

ii. **Staff**

All the libraries in the University are operated and managed by a team of highly skilled and experienced staff members who are knowledgeable in all aspects of Library Science and Information Technology. The academic qualifications of library staff range from Certificate to Master's Degrees. The staff are adequately deployed in all the service points. These dedicated professionals provide excellent support to all library users, ensuring that the diverse information needs of the users are met efficiently and effectively.

iii. **Resources and services**

The Library is fully automated and provides a range of information resources and services to cater to academic and research needs. It boasts a large collection of physical books covering all the courses taught at the University, and users have the privilege of borrowing them for a specified duration. To facilitate efficient resource discovery, the Library provides an Online Public Access Catalogue (OPAC) that allows users to search and locate information materials stocked in the library. Furthermore, the Library subscribes to a diverse range of electronic books and journals from reputable databases. These resources are accessible both on-campus and remotely through off-campus access, eliminating geographical barriers to knowledge acquisition and learning.

In line with the commitment to preserving and disseminating scholarly work, the library provides users access to archived scholarly publications generated by SEKU staff and students. Archived publications include journal articles, theses, and dissertations. To ensure originality in research and academic work, all research proposals, projects, theses, dissertations, and other research works are subjected to anti-plagiarism checks before acceptance.

For those in need of research facilities, the Library houses a Digital Library section which is equipped with internet-enabled computers for research and access to online library resources. Additionally, the Wi-Fi connectivity allows library users to stay connected using their personal devices such as laptops and smartphones. Moreover, the Library conducts regular information literacy training, covering topics like e-resources access, institutional repository usage, catalog search, and citation tools, as a way of empowering lifelong learning among users.

In addition to academic resources, the Library provides access to e-Newspapers from major newspaper publishers in Kenya, ensuring that users are up-to-date with the latest news and current events. Lastly, the Library extends personalized assistance through the "Ask a Librarian" service. Users can easily reach out the library for inquiries or guidance on research and information needs.

The current subscriptions of electronic resources are as shown in the table 1 below.

Table 1. Current university subscriptions of electronic resources.

No.	Database	E-Journal Articles	E-Books	Book Chapter	Total
Electronic Journal Databases					
1.	AGORA	61,000,000	106,000	1,300,000	62,406,000
2.	American Physical Society	461,511			461,511
3.	Cambridge University Press Journals	1,800,000	46,347		1,846,347
4.	Duke University Press	81,717			81,717
5.	EBSCOHOST	14,339,066			14,339,066
6.	Emerald Journals	374,945		50,162	425,107
7.	European Respiratory Journal	60,711			60,711
8.	Geological Society	33,989			33,989
9.	Henry Stewart Talks Ltd	5,937 (lectures)			5,937
10.	HINARI	13,817,975	106,000	1,300,000	15,223,975
11.	IEEE	228,813	7,888		236,701
12.	International Water Association	41,572	785	2,909	45,266
13.	JSTOR	2,781,949		25,797	2,807,746
14.	Mary Ann Liebert	16,4591			164,591
15.	Mathematical Sciences Publishers	254, 987			254, 987
16.	Online Access to Research in the Environment (OARE)	61,000,000	106,000	1,300,000	62,406,000
17.	OpenEdition	72,609			72,609
18.	Organisation for Economic Co-operation and Development (OECD)	18,843	720	92,211	111,774
19.	Oxford University Press Journals	1,834,761			1,834,761
20.	Project MUSE Journals	195,271			195,271

21.	Royal Society	872,431			872,431
22.	Sage Journals	1,308,784			1,308,784
23.	Taylor & Francis Journals	3,869,729			3,869,729
24.	The Company of Biologists' Journals	72,375			72,375
25.	University of Chicago Press Journals	1,267,331			1,267,331
26.	Wiley Online Library	2,143,788			2,143,788
27.	Wolters Kluwer's Basic Sciences Collection	25,328			
Electronic Book Databases					
1.	Ebrary/ProQuest		211,089		211,089
2.	Taylor and Francis eBooks		5,000		5,000
Open Access Databases					
3.	Academic Journals	1,500,000			1,500,000
4.	African Journals Online (AJOL)	192,709			192,709
5.	Biomed central	515,355			515,355
6.	MDPI	450,000			450,000
7.	National Academies Press		14,530		14,530
8.	National Center for Biotechnology Information		96,865		96,865
9.	Nepal Journals Online (NEPJOL)	26,848			26,848
10.	PubMed	22,272			22,272
11.	SCIRP (Scientific Research)	1,500,000			1,500,000
12.	Directory of Open Access Journals		58,376		58,376
13.	The World Bank Open Knowledge Repository (OKR)	34,276			34,276

c) Information and Communication Technology

The University has an ICT directorate headed by a director. The directorate ensures that the University has access to research databases and can share information in real time. The University is connected to internet with capacity of 295 mbps. Average usage of this internet is at about 260 mbps. The staff and students have access to both cabled and secure Wi-Fi in the compound. Staff and students also have access to over 400 computers that are available for use.

d) Laboratories

The University has modern science laboratories with adequate modern equipment. These laboratories include Biology, Chemistry, Physics, Agriculture, Environmental, Biochemistry and Biotechnology Research laboratories. The University also has a computer laboratory furnished with adequate computers for students to conduct their research work as well as learn various programming languages. The School of Science and Computing and ICT have computer software like R, MATLAB, STATA, and SPSS that enable students to perform numerical computation with large sets of data as well as writing reports on their findings.

1.4.2 Reference materials

a) Core textbooks

There are 22 core textbooks and journals required for the course (Appendix III)

b) E-books

The University has current subscriptions shown earlier in Table 1

c) Print journals

Main subscriptions are in electronic resources and physical materials.

d) E-journals

The University has current subscriptions shown earlier in Table 1

1.4.3 Academic staff

a) **Academic Staff**

The Department of Agricultural Sciences has adequate number of qualified and experienced staff to mount the programme (Appendix IV).

b). **Technical staff**

The university has employed, on permanent basis, a team of technical staff who have the necessary professional qualifications as shown in Appendix V.

1.5 Programmes offered by the university

1.5.1 List of programmes offered by South Eastern Kenya University

South Eastern Kenya University offers a range of programmes from undergraduate to postgraduate levels, which are domiciled in different schools as shown in table 2 below. This list can also be accessed in the University website, www.seku.ac.ke.

Table 2: Academic programmes offered by South Eastern Kenya University

Programme	**Academic organization**	**Total lecture hours required for graduation**
School of Agriculture, Environment, Water and Natural Resources		
Bachelor of Science (Agriculture)	Semester	2240
Bachelor of Science (Dryland Agriculture)	Semester	2240
Bachelor of Science (Dryland Animal Science)	Semester	2240
Bachelor of Science (Animal health and Entrepreneurship))	Semester	2240
Bachelor of Science (Horticulture)	Semester	2240
Bachelor of Science (Range Management)	Semester	2240
Bachelor of Science (Agribusiness Management and Entrepreneurship)	Semester	2240
Bachelor of Science (Agricultural Education and Extension)	Semester	2240
Bachelor of Science (Hydrology and Water Resources Management)	Semester	2240
Bachelor of Science (Fisheries Management and Aquatic Technology)	Semester	2240
Bachelor of Science (Aquatic Science)	Semester	2240
Bachelor of Science (Geology)	Semester	2240
Bachelor of Science (Meteorology)	Semester	2240
Bachelor of Science in Forestry	Semester	2240

Bachelor of Science (Environmental Conservation and Natural Resources Management)	Semester	2240
Bachelor of Science (Environmental Planning and Management)	Semester	2240
Bachelor of Science (Land Resources Management)	Semester	2240
Bachelor of Science (Agro-Ecosystems and Environmental Management)	Semester	2240
Bachelor of Science (Forestry and Community Development)	Semester	2240
Bachelor of science in Climate Change	Semester	2240
Bachelor of Science (Environmental Management)	Semester	2240
Master of Science (Agricultural Resources Management)	Semester	1125
Master of Science (Livestock Production Systems)	Semester	1125
Master of Science (Agronomy)	Semester	1125
Master of Science (Agrometeorology)	Semester	1125
Master of Science (Agricultural Economics)	Semester	1125
Master of Science (Range resources Management)	Semester	1125
Master of Science in Comparative Mammalian Physiology	Semester	1125
Master of Science in Reproductive Biology	Semester	1125
Master of Science (Aquaculture)	Semester	810
Master of Science in Integrated Water Resources Management	Semester	810
Master of Science (Integrated Water Resource and Watershed Management)	Semester	810
Master of Science (Mineral Exportation and Mining)	Semester	810
Master of Science (Exploration Geo-Physics)	Semester	810
Master of Science (Climate Change and Agroforestry)	Semester	810
Master of Science in Environmental Management	Semester	810
Master of Science (Environmental planning and management)	Semester	810

Master of Science (Biodiversity conservation and Management)	Semester	810
Doctor of Philosophy (Agricultural Resources Management)	Semester	1125
Doctor of Philosophy (Animal Science)	Semester	1125
Doctor of Philosophy (Agricultural Economics)	Semester	1125
Doctor of Philosophy (Water Resources Management)	Semester	810
Doctor of Philosophy (Climate Change and Agroforestry)	Semester	810
Doctor of Philosophy (Environmental Management)	Semester	810
School of Business and Economics		
Bachelor of Business and Information Technology	Semester	1680
Bachelor of Project Planning and Management	Semester	1680
Bachelor of Commerce	Semester	1680
Bachelor of Procurement and Supply Chain Management	Semester	1680
Bachelor of Economics	Semester	1680
Bachelor of Economics and Statistics	Semester	1680
Bachelor of Freight & Logistics Management	Semester	1680
Bachelor of Entrepreneurship, Technology & Innovation Management	Semester	1680
Master of Business Administration	Semester	810
Master of Arts in Economics	Semester	810
Master of Entrepreneurship & Innovation Management	Semester	810
Master of Science in Supply Chain management	Semester	810
Doctor of Philosophy in Business Administration	Semester	810
School of Education		
Bachelor of Education (Arts)	Semester	2240
Bachelor of Education (Science)	Semester	2240
Bachelor of Education (Early Childhood)	Semester	2240
Master of Education in Kiswahili Methods	Semester	810

Master of Education	Semester	810
Master of Education (Early Childhood Education)	Semester	810
Master of Education (Guidance and Counselling)	Semester	810
Master of Education (Educational Psychology)	Semester	810
Doctor of Philosophy in Educational Administration and Planning	Semester	810
School of Humanities and Social Sciences		
Bachelor of Arts (Social Work)	Semester	2240
Bachelor of Criminology & Social Justice	Semester	2240
Bachelor of Arts (Gender and Development studies)	Semester	2240
Bachelor of Arts	Semester	2240
Bachelor of Arts, Hospitality & Tourism	Semester	2240
Master of Arts (Sociology)	Semester	810
Master of Arts in Religious Studies	Semester	810
Master of Arts (Gender and Development Studies)	Semester	810
Master of Arts (Kiswahili)	Semester	810
Master of Arts (Linguistics)	Semester	810
Master of Arts (Geography)	Semester	810
Doctor of Philosophy in Kiswahili	Semester	810
School of Engineering and Technology		
Bachelor of Science (Textile Technology & Applied Design)	Semester	2700
Bachelor of Science in Electrical & Electronics Engineering	Semester	3600
Bachelor of Science in Mechanical Engineering	Semester	3600
Bachelor of Science in Agricultural Engineering	Semester	3600
School of Health Sciences		
Bachelor of Science (Public Health)	Semester	2240
Bachelor of Science (Population Health)	Semester	2240
Bachelor of Science (Medical Microbiology)	Semester	2240

Bachelor of Science (Nursing)	Trimester	6495
Bachelor of Science in Food Science, Nutrition and Dietetics	Semester	3160
Bachelor of Science in Food Safety and Quality Assurance	Semester	2520
Bachelor of Science in Medical Laboratory sciences	Semester	3960
Bachelor of Science in Health Records and Information technology	Semester	2240
Bachelor of Science in Food Science and Technology	Semester	2240
Master of Science (Epidemiology)	Semester	1125
Master of Science (International Health)	Semester	1125
Master of Science in Public Health	Semester	885
Master of Science (Food Science and Nutrition)	Semester	1125
Master of Science (Infectious Disease Diagnosis)	Semester	1125
School of Science and computing		
Bachelor of Science (Mathematics)	Semester	2240
Bachelor of Science (Actuarial Science)	Semester	2240
Bachelor of Science (Statistics)	Semester	2240
Bachelor of Science (Biology)	Semester	2240
Bachelor of Science (Biochemistry and Molecular Biology)	Semester	2240
Bachelor of Science (Chemistry)	Semester	2240
Bachelor of Science in Physics	Semester	2240
Bachelor of Science (Electronics)	Semester	2240
Bachelor of Science (Medical Botany)	Semester	2240
Bachelor of Science (BSc)	Semester	2250
Bachelor of Science in Computer Science	Semester	2240
Bachelor of Information Technology	Semester	2240
Master of Science in Biodiversity Conservation and Management	Semester	1125
Master of Science in Biotechnology	Semester	1125

Master of Science in Biochemistry	Semester	1125
Master of Science in Entomology	Semester	1125
Master of Science in Applied Physics	Semester	1125
Master of Science in Information Sciences	Semester	810
Doctor of Philosophy in Physics	Semester	1125
Doctor of Philosophy in Molecular Forensic Technology	Semester	1125
Doctor of Philosophy in Entomology	semester	1500

1.5.2 Duration of each programme indicating total lecture/instructional hour requirements for graduation

The duration for regular programmes is 4, 2 and 3 years respectively for bachelor's, master's and doctorate degrees. These translates to 8, 4 and 6 semesters for bachelor's, master's and doctorate degrees. The total lecture hours requirements for graduation are indicated against the programmes in table 2 above.

1.5.3 Definitions of Terms in the Units

a. *Credit hour*: a credit hour is equivalent to one lecture hour per week for a minimum of fifteen weeks of teaching.
b. *Lecture /instructional hour*: this is equivalent to one (1) contact hour or three (3) hours of practical work or two (2) hours of tutorials.
c. *Contact hour*: this is similar to lecture hours and is equivalent to one (1) contact hour or three (3) hours of practical work or two (2) hours of tutorials.
d. *Course unit hours*: this is three (3) credit hours per week which is equivalent to forty-five (45) lecture hours in a semester.

One instructional hour is equivalent to:

a. One contact hour in a lecture designed session.
b. Two contact hours in a tutorial designed session.
c. Three contact hours in a laboratory designed or practicum session.
d. Five contact hours in a farm or field practice.

1.5.4 Academic organization

The programmes are organized in semesters or trimesters as indicates in table 2.

2.0 THE CURRICULUM

2.1 The title of the proposed Programme

The proposed programme title shall be **Master of Science in Food Value Chain Management**

2.2 Philosophy of the proposed Programme

The philosophy of Master of Science in Food Value Chain Management is to develop skills and innovative solutions through research and commercialization of the agrifood sector.

2.3 Rationale and justification of the proposed Program

2.3.1 Needs assessment/market survey/situational analysis

A needs assessment survey was conducted with a goal to determine whether the academic programme sufficiently addresses the needs of the market. A curriculum development committee was constituted (Annex 1) to spearhead the process. In developing the curriculum, consideration was given to the requirements of the Commission for University Education (CUE) as per the University Guidelines and Standards (2014), SEKU Academic Programme Development Policy, and SEKU ISO 9001 2015 Standards.

The methodological approach employed in conducting the needs assessment was based on a number of considerations. The team appreciated that a study of this nature and magnitude required the use of a mixture of methods of data collection and analysis. There would be no single method that would meet all the necessary requirements for the study. Thus, the following methods were utilized:

1. Online survey: The Committee conducted an online survey between 26th March 2024 and 2nd April 2024 using a questionnaire (Annex 2) with respondents drawn from different demographic, geographic, academic and occupational backgrounds from around Kenya.
2. Benchmarking: Through consultative meeting and discussions among 6 Higher Education Institutions in Africa namely SEKU, Jaramogi Oginga Odinga University of Science and Technology (JOOUST), Federal University Ndufu Alike Ikwo - AE-FUNAI, Federal University of Technology, Minna – FUTMINNA, University of Kara

– UK, University of Lome - UL and European partners the in Cooperation for Holistic Agriculture Innovation Nests in Sub-Saharan Africa (CHAIN) Project.

3. Desktop literature review of relevant documents and studies: A review of available literature including the CUE, MoE guidelines, standards and policies as well as legal and administrative frameworks governing Higher Education.

The committee received views from a wide range of stakeholders spanning a spectrum of specializations. They included Social Sciences, Life Sciences, Health Sciences, Natural Sciences, Business, Agricultural Sciences, staff and students. The survey overwhelmingly supported the development and mounting of MSc. Food Value Chain Management at School of Agriculture, Environment, Water and Natural Resources at South Eastern Kenya University (Appendix X). The proposed programme will enhance the quality of graduates to better handle current and emerging issues in food safety and quality through the value chain and at the regulatory level.

2.3.2 Stakeholder involvement

During the process of the development of this programme staff from academia and research organizations, namely Kenya Medical Research Institute (KEMRI), International Livestock Research Institute (ILRI), International Primate Research, Kenya Agricultural & Livestock Research Organization (KALRO), National Biosafety Authority (NBA) and International Service for the Acquisition of Agri-biotech Applications (ISAAA) – *Afri*Center; Mahyco grow® and the Kenya Seed Company; Nestle Kenya, National Environment Management Authority (NEMA); AstraZeneca and GlaxoSmithKline were consulted. These persons work in some of the main institutions associated with the PhD biotechnology course. They agreed on the suitability of the PhD course in biotechnology and expressed their support for its mounting in SEKU (Appendix XI).

2.3.3 Justification for the program

In Kenya, the agricultural sector is the backbone of the economy, contributing up to 33 percent of the country's Gross Domestic Product (GDP). The sector employs more than 40 percent of the total population and 70 percent of the rural population.SDG2 focuses on ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture. Fortification is an evidence-informed intervention that contributes to the prevention, reduction and control of micronutrient deficiencies. It can be used to correct a demonstrated micronutrient deficiency in the general population (mass or large-scale fortification) or in specific population groups (targeted fortification) such as children, pregnant women and the beneficiaries of social protection programmes. When the vitamins and minerals are not added to the foods during the processing but just before consumption at home or at schools or child-care facilities, it is called point-of-use fortification. In addition to the micronutrient deficiencies, policies and implementation programmes for fortification need to consider an alignment with policies for the reduction of diet-related noncommunicable diseases. Such is the case of salt iodization, which builds on sodium consumption and, as result, needs to consider strategies for sodium intake reduction.

The government's policy concerning agricultural transformation, coupled with the world's complex and competitive business environment, necessitates the need for highly qualified and capable professionals in the fields of agribusiness and value chain management. A significant disparity exists between the capabilities demanded by the intricate and dynamic business processes within agribusiness organizations. Universities seek to close the gap between the demands of the agri-food chain and their research and teaching operations. The proposed programme is intended to enhance the quality of graduates to better handle current and emerging issues in food safety and quality through the value chain and at the regulatory level.

2.4 Goal of the Programme

The programme aims to develop skilled, highly competent, and creative professionals who can spearhead the nation's agricultural commercialization in response to the ever-changing demands of customers.

2.5 Expected Learning Outcomes

By the end of the programme learners should be able to:

a) Evaluate advances of approaches and practices in food value chain management.

b) Apply acquired skills and knowledge in agri-preneurship and food processing

c) Design and carry out research on food value chains.

d) Design / or manage food value chain programs

2.6 Mode of delivery of the program

The mode of delivery shall be face to face and blended learning.

2.7 Academic Regulation for Masters of Science in Food Value Chain

2.7.1 Admission requirements for the program

The candidate must satisfy the minimum University admission requirements according to Universities Standards and Guidelines, 2014 (PROG/STD/09) and University statutes. The common regulations applicable to the Masters' degree of the South Eastern Kenya University (SEKU) and the School of Agriculture, Environment, Water and Natural Resources shall apply. The following shall be eligible for admission for the degree Master of Science in Food Value Chain Management.

(a) A holder of a Bachelor's degree in Agriculture or related Agricultural discipline with at least Second Class Honours (Upper Division) of South Eastern Kenya University, or equivalent qualification from an institution recognized by Senate.
OR
(b) A holder of a Postgraduate Diploma in Agricultural Science of at least Credit or equivalent qualification from an institution recognized by Senate.
OR
A holder of a Bachelor's degree in Agriculture or related Agricultural discipline with at least Second Class Honours (Lower Division) of South Eastern Kenya University, or equivalent qualification from an institution recognized by Senate with additional relevant training, evidence of research capability either through research, paper presentations or peer reviewed publications and work experience since graduation with a Bachelor's degree.
OR
(c) Any alternative qualifications recognized by the South Eastern Kenya University.

2.7.2 Regulation on credit transfer

Credit transfers shall be accepted for the purpose of student mobility and recognition of prior learning according to the Universities Standards and Guidelines, 2014 (PROG/STD/10). In line with the existing qualification frameworks, credit transfers shall only be accepted from accredited institutions and programs. Candidates from other universities recognized by the South Eastern Kenya University senate applying for Credit Transfer to the MSc degree programme in Food Value Chain shall be permitted up to a maximum of 49% of the core course units for similar programs at the same level. The minimum grade required for credit transfer shall be Grade B.

2.7.3 Course requirements

a) Student Class Attendance

Student registered for the degree programme shall be required to regularly attend lectures, tutorials, group discussions, seminar, among others. A candidate must have attended an equivalent of 2/3 of the lectures to be allowed to sit for the end of semester examinations.

b) Obligation of the lecturer

The lecturers responsible for the delivery of the programme shall have the following obligations:

(i) Conduct research to obtain the most current knowledge, ideas, tools, methodologies, processes, to be shared with the students.
(ii) Facilitate critical thinking and development of analytical capabilities of the students.
(iii) Introduce students to key topics and guide students in problem-solving assignments.
(iv) Monitor the progress of each student and advice on the corrective action where progress of the students is unsatisfactory.
(v) Regularly review the progress of each of the candidate and provide feedbacks on the research carried out by the students.

(vi) Ensure teaching meets the highest academic standards possible.
(vii) Set and mark continuous assessment tests and the final examinations.
(viii) Guide students on group discussions and seminar presentations.

2.7.4 Student Assessment Policy/Criteria

The University's Common Regulations regarding students' assessment shall apply. The assessments shall be carried in the form of:

(i) Continuous Assessment Tests (including practical's, assignments, research papers and or project reports) that shall be done throughout the first and second semester during year 1 of study.
(ii) End of the Semester Examinations that shall be given at the end of every semester for each of the course units taught during the semester.
(iii) Supplementary examinations that shall be given to candidates who fail the end of semester examinations.
(iv) Special examinations that shall be given to students who fail to sit for ordinary end of semester examination due to reasons that are acceptable to the Schools' Academic Board and the University Senate, and
(v) Thesis that shall be examined at the end of the two (2) year study period.

Each end-of-the semester examinations and special examinations shall constitute sixty percent (60%) of all the total marks in each course unit, while continuous assessment tests shall constitute forty percent (40%). In every course unit taken, the pass mark in the final examination shall be fifty percent (50%).

2.7.5 Grading System

The final university examinations for the Master of Science degree programme shall be given at the end of every semester for each of the course units taught during the semester. Each final examination shall be in the form of a three (3) hour written examination paper.

Each end-of-the semester examination shall constitute sixty percent (60%) of all the total marks in each course unit, while continuous assessment tests shall constitute forty percent (40%). In every course unit taken, the pass mark shall be fifty percent (50%).

The grading of the course units shall be as follows as shown in 2.7.6.1 (c) below.

2.7.6 Examination Regulations

2.7.6.1 Written examinations (Part I)

a) No candidate shall be permitted to sit an examination unless he/she has satisfactorily attended at least two thirds of the prescribed course of study.
b) Each course shall be examined out of a total of one hundred percent (100%).

c) The pass mark its each course examination shall be fifty percent (50%) and graded as follows: -

70	100%	A
60	69%	B
50	59%	C
49% and below		FAIL

d) Written examination in each course shall be by a 3-hour examination and shall constitute sixty percent (60%). The Continuous Assessment Tests (CATs) shall constitute the remaining forty percent (40%).

e) Candidates shall be required to take semester examinations and pass all courses.

f) Candidates shall not be allowed to proceed to part II of study until they pass all coursework examinations.

g) A candidate may, on the recommendation of the School Board of Examiners and approval by Senate, be permitted to take Special Examinations, in the course(s) for which the candidate failed to sit Ordinary Examinations at the prescribed time. The reasons MUST be acceptable to the School Board. Special Examinations shall be graded as Ordinary Examinations.

h) A candidate who fails in not more than two course unit(s) may, on the recommendation of the Board of Examiners and approval by the Senate, be allowed to take a supplementary examination in the failed paper(s) after paying the appropriate fees.

i) Supplementary examinations shall be marked out of one hundred percent (100%) but the pass grade shall be recorded as fifty percent (50%).

j) A candidate who fails to sit for end of semester examination(s) for unit(s) registered will be awarded zero (0) mark, provided the reasons do not fall under regulation g.

k) A candidate, on the recommendation of Faculty Board of Examiners and approval by the Senate, shall be discontinued if he/she
   i. Fails in more than two course units in ordinary examination, OR
   ii. Fails in the supplementary examination, OR
   iii. Fails to complete the courses within the prescribed time.

2.7.6.2 Thesis or research project Examination (Part II)

a) The Thesis or Research Project will be examined in accordance with the common regulations of the South Eastern Kenya University (refer to Board of Postgraduate Studies).
b) Thesis or Research Project shall be marked out of 100 marks.
c) The pass mark shall be fifty percent (50%).
d) A candidate who fails in the thesis or research project examination may, on the recommendation of the School Board of examiners and Board of Postgraduate Studies, be allowed to resubmit the thesis or research project for re-examination in a revised form once only within twelve months.

e) The pass mark obtained after resubmission shall be recorded as fifty percent (50%).
f) A candidate who fails in the thesis or research project after resubmission shall, on the recommendation of the Board of Examiners or School Board, respectively, and approval by Senate, be discontinued.
g) The postgraduate degrees are not classified.

2.7.6.3 Award of degree

Candidates who satisfy the examiners in all written and thesis/ research project examinations shall be awarded the respective Masters degree.

2.7.6.4 Examination Irregularities

a) A student who is found guilty of any irregularities during any continuous assessment or University examinations shall be subject to the appropriate penalties as detailed in the University Examination Regulations.
b) The Senate Examination Disciplinary Committee regulations shall apply in all examination disciplinary cases.
    i. A student who is suspected to have committed examination malpractices shall be required to defend her/himself in the Student Disciplinary Committee where evidence on the examination malpractice committed by the student shall be tabled.
    ii. Any candidate who is found guilty of examination malpractices shall be expelled from the University.
    iii. A student expelled from the university due to examination malpractices may appeal to the Vice Chancellor within a period of one month after the expulsion. The Vice Chancellor shall subsequently appoint an ad hoc committee to hear the appeal and make recommendations to the University Senate.

2.7.6.5 Conduct of studies and supervision

2.7.6.5.1 Students Rights responsibilities and Obligations

A candidate registered in accordance with the university rules and regulations shall be required to pursue the programme of study under the supervision of academic staff appointed in that capacity

by the Senate on the recommendation of the Academic Board of the School of Agriculture Environment Water and Natural Resources and the Board of Postgraduate Studies.

The candidates shall be required to consult their supervisors at least once every month, and to submit a termly written progress report to the Dean of the School of Agriculture Environment Water and Natural Resources through the Supervisors and Chairman of the Department of Agricultural Sciences with copies to the Director, Board of Postgraduate Studies.

Each candidate shall be required to attend and participate in seminars organized at the school once every 3 months to enable the Schools' Academic Board and the supervisors to assess the candidate's progress more effectively and to keep candidates in constant touch with the School.

2.7.6.5.2Appointment of Supervisors

The appointment of supervisors shall be according to university statutes 19 (15-18), on the conduct of studies and supervision. Recommendations of the appointment of supervisors shall be processed in the first instance by the Department of Agricultural Sciences through the School's Postgraduate Studies Committee. The recommendation shall then be forwarded to the School Academic Board for approval and onward transmission to the University Senate through the Board of Postgraduate Studies.

Before recommending the appointment of any supervisor, the Schools' Academic Board shall satisfy itself that the proposed supervisor is competent in the subject area and field of research in which the candidate proposes to work.

Where a supervisor is appointed from outside the university, such a supervisor should show evidence of competence around study through publications made since obtaining his/her higher degree, and as indicated in a curriculum vitae. Such evidence shall be requested only once from respective external supervisors.

Normally, two supervisors will be appointed for each candidate, one of whom must be among the academic staff in the Department of Agricultural Sciences. However, the Schools' Academic Board may appoint additional supervisors as it may deem necessary in each individual cases.

2.7.6.5.3 Role and responsibilities of Supervisors

It shall be the duty of each of the supervisors to direct and supervise the work of the student in so far as it relates to the programme of study. In particular, the supervisor shall be required to adhere to the guidelines of the university Statutes 19 (19) that requires supervisors to:

i. Maintain constant and effective contact with candidates assigned to him/her.
ii. Submit individually or jointly with other supervisors, academic reports through the Chairman of Department of Agricultural Sciences to the Dean of the School of Agriculture

Environment, Water and Natural Resources, on the progress of each candidate at the end of every semester.

iii. Certify at the end of every semester that the candidate has received adequate supervision.

iv. Inform the Dean of the School of Agriculture, Environment, Water and Natural Resources through the Department and School Postgraduate Studies Committee at once if in his/her opinion, a given candidate's work is unsatisfactory and unlikely to reach the standard required for the award of the MSc degree.

The performance of a candidate is considered unsatisfactory as shown by: either failure to consult the supervisors or the receipt of an unsatisfactory report from the supervisors.

A candidate whose performance is unsatisfactory shall be given a written warning by the Dean of the School of Agriculture, Environment, Water and Natural Resources to the effect that unless he/she shows signs of improvement within three months, he/she would be considered for deregistration according to Statute 20(20).

A recommendation for deregistration shall be made by the Board of Postgraduate Studies to the University Senate only after receipt of two consecutive negative reports following the warning as per the Statute 20(21).

2.7.6.5.4 Role and responsibilities of Dean

The Dean of the School of Agriculture, Environment, Water and Natural Resources shall have the following responsibilities in as far as the supervision of candidates:

i) Ensure that competent lecturers are appointed as supervisors to provide effective supervision to the candidates.
ii) Provide written warning to candidates whose progress is considered unsatisfactory.
iii) Advice the Board of Postgraduate Studies and the Senate on the registration or deregistration of candidates.
iv) Chair the candidates Board of Examiners.
v) Ensure the programme is delivered as per the highest standards.

2.7.6.5.5 Role and responsibilities of the Director of the Board of Postgraduate Studies

The Director of the Board of Postgraduate Studies shall have the following responsibilities:

i) Processing of the registration of candidates.
ii) Formalization of appointment of supervisors.
iii) Coordination of the process for examination of candidate's thesis.
iv) Communication of the award of the masters' degree to the successful candidates.

The role of the Board of Postgraduate Studies is stated in the University Statutes 41.

2.7.6.5.6 Conditions for Change of Registration Status

Recommendations of the change of registration status from full time and vice versa, shall be processed in the first instance by the Department of Agricultural Sciences through the School's

Postgraduate Studies Committee. The recommendation shall then be forwarded to the School's Academic Board for approval and onward transmission to the Senate through the Board of Postgraduate Studies.

2.7.6.5.7 Conditions for change of Supervisors

Recommendations of the change of supervisors made by a candidate shall be processed in the first instance by the Department of Agricultural Sciences through the Schools' Postgraduate Studies Committee. The recommendation of the committee shall then be forwarded to the Schools' Academic Board for approval and onward transmission to the University Senate through the Board of Postgraduate Studies.

Before recommending the change of any supervisor, the School's Postgraduate Studies Committee (SPSC) shall satisfy itself that the change is necessary on the grounds of non-availability of the supervisors or incompetency in the subject area and field of research in which the candidate is working.

2.7.6.5.8 Submission and evaluation of candidates' progress reports

The main supervisor of the candidate shall at the end of every semester, submit progress reports in prescribed form on candidate's progress to the Director of the Board of Postgraduate Studies through the Chairman of the Department of Agricultural Sciences with copies to the Dean of the School of Agriculture, Environment, Water and Natural Resources. Student and supervisor interaction will be evaluated using the post graduate student tracking form.

The Department through the School's Postgraduate Studies Committee shall process the evaluation of candidate's progress in the first instance. The recommendation shall then be forwarded to the Board of Postgraduate Studies for onward transmission to the University Senate.

2.7.7 Moderation of Examinations

The moderation of the setting of the end of semester examination papers during the year 1 of study shall be as follows:

a) The Department shall establish a moderation committee that shall be chaired by the Chairman of the Department. The moderation committee shall consist of all academic members of staff in the Department including the internal examiners.
b) The moderation committee shall undertake initial moderation of each of the end of semester examination papers. The recommendations of the committee shall be integrated in the final versions of the examination papers that shall be transmitted by the School's Examination Coordinator at least six (6) weeks before the examination date, to an external examiner who shall provide recommendations for their improvement.

c) The external examiner shall moderate the setting of each end of semester examination papers and shall submit a report to the Chairman of Department within a period of one (1) week on receipt of the draft examination papers.
d) The Chairman of the Department shall direct the internal examiners to consider taking on board the recommendations of the external examiner, as may be appropriate.
e) The moderation of the marking of the end of semester examination papers during the year 1 of study shall be as follows:
    i. The internal examiner shall mark the end of semester examination papers and forward the marked scripts to the Chairman of the Department who shall subsequently forward them to an external examiner appointed by the University Senate.
    ii. The external examiner shall moderate end of semester examination papers, evaluate marking, grading and performance of candidates and shall submit a consolidated report to the Vice-Chancellor within a period of four (4) weeks on receipt of the draft examination papers.
    iii. Departmental Academic Board shall consider the report of the external examiner and make recommendations to the Schools' Academic Board on each end of semester examination papers.
    iv. School's Academic Board shall consider the recommendations of the Departmental Academic Board and the External Examiner and make appropriate recommendations to the University Senate.

2.7.8 Graduation requirements

For the award of the degree, a student must have passed in all the course units of the programme and a thesis with a pass mark of 50%. Before award of a Masters' degree, a candidate shall be required to have published at least one (1) paper in refereed scientific journals according to the requirements of the Commission for University Education Standards and Guidelines (2014) and university statutes, rules and regulations. The publications shall be based on the research carried out by the candidate and must form part of the MSc Thesis submitted for examination. The student shall also be expected to be compliant to all other University requirements as demanded by the University statues and the Board of Post Graduate studies. Total number of credit hours for the program is 945.

2.7.9 Classification of degree

The Master of Science degree in Food Value Chain Management shall not be classified.

2.7.10 Description of Thesis

2.7.10.1 Definition, rationale, and facets

A candidate who is pursuing the programme and successfully completes the coursework and written examinations in the year 1 of study shall proceed to prepare and present a research proposal

in a Departmental seminar during the second semester of year 1 of study according to University Statutes 20(7)

A candidate who successfully defends his/her proposal in the Departmental seminar and undertakes all the necessary corrections, shall be supervised by least two (2) academic members of staff who have appropriate qualifications in the subject area in focus and its methodology.

A candidate shall undertake supervised research, write and submit a thesis for examination as partial fulfilment of the postgraduate degree.

The Thesis shall be presented in sections that represent various components that include but are not limited to the abstract, introduction, literature review, methodology, presentation of results, discussions, conclusions, references and appendices.

2.7.10.2 Regulation for Thesis

a) The Thesis shall be examined according to the university statutes 19 parts 27-39 on the submission and examination of Thesis. A candidate who successfully defends his or her proposal in the Departmental seminar and undertakes all the necessary corrections will be supervised by at least two (2) academic members of staff who shall have appropriate qualifications in the subject area in focus and its methodology.
b) A candidate shall undertake supervised research, write and submit a thesis for examination within a minimum of one (1) academic semester and a maximum of two (2) academic semesters. The Thesis shall be an original research document submitted in support of the candidature for the MSc degree and must present the candidate's original research and findings.
c) The Thesis shall be presented in sections that represent various components that include but are not limited to the abstract, introduction, literature review, and methodology, presentation of results, discussion, conclusion, references and Appendices.
d) With approval of the supervisor, each candidate will submit a written thesis report for examination.
e) The thesis shall be examined in accordance with the common regulations of the Board of postgraduate studies of South Eastern Kenya University.
f) The thesis shall be expected to demonstrate acquisition of the relevant research skills and their effective application to an investigation of substance and significance in the area of study.
g) The thesis shall be marked out of 70%.
h) The candidate shall also present the thesis orally before a panel of examiners. The oral presentation shall be marked out of 30%.
i) The pass mark for the thesis shall be 50%.
j) A candidate who fails to satisfy the examiners in the thesis shall be allowed up to two resubmissions of the thesis.

k) A candidate, who fails to submit the thesis report or fails in the second resubmission of the thesis, on the recommendation of the School Board of Examiners and approval by senate, shall be discontinued.

2.7.10.2.1 Allocation and selection of supervisors

a) Supervisors shall be allocated to the candidate who successfully defends his or her research proposal in the Departmental seminar and undertakes all the necessary corrections.
b) The selection of supervisors shall be according to the university Statutes 20(17-21). Before selecting any supervisor, the Departmental or School Academic Board shall satisfy itself that the proposed supervisor is competent in the subject area and field of research in which the candidate proposes to work.
c) Where a supervisor is selected from outside the university, such a supervisor shall be required to demonstrate evidence of competence in the area of study through publications produced.

2.7.10.2.2 Submission of Thesis

a) The submission of thesis for examination shall be according to University Statute 20(23-24).
b) At least three months before a thesis is submitted, a candidate shall give notice in a prescribed form to the Director of the Board of Postgraduate Studies through the Dean of the School Agriculture, Environment, Water and Natural Resources and Chairman of the Department of Agricultural Sciences and an abstract outlining the general scope of work.
c) A candidate shall submit to the Board of Postgraduate Studies, a thesis that fully adheres to the requirements stipulated in the University Statute 20(23-24).

2.7.10.2.3 Selection of *viva-voce* panel

a) The University Senate shall on the recommendation of the Board of the School of Agriculture, Environment, Water and Natural Sciences appoint in respect of each candidate presenting a thesis, a Board of Examiners according to university Statute 20(25) on the submission of the thesis and examination of the candidate. The Board of Examiners shall consist of the following:
    i. Dean of the School or his representative as the Chairman.
    ii. An external examiner.
    iii. Two internal examiners one of whom must have not supervised the candidate.
    iv. Two other persons competent in the candidate's area of research and at least one external to the Department.
    v. A representative of the Board of Postgraduate Studies.

2.7.102.4 Conduct of thesis defense and Oral Examinations

a) Conduct of thesis defense and Oral Examinations shall be according to University Statute 20(27).

b) Within a month of the receipt of all examiner's reports, the Board of Postgraduate Studies in consultation with the Dean of the School of Agriculture, Environment, Water and Natural Resources shall convene a meeting of the Board of Examiners at which the Examiners reports, other academic matters arising from the thesis, and the candidates defense shall be considered. A consolidated report and appropriate recommendations shall be prepared for submission to the University Senate through the Board of Postgraduate Studies within two weeks. Provisional results shall be released to the candidate after the meeting only where the recommendation of the Board of Examiners is unanimous.
c) Candidates shall be required to present themselves for oral examination and the Dean School of Agriculture, Environment, Water and Natural Resources shall inform them of the time and place of the meeting of the Board of Examiners.
d) The external and the internal examiners shall each be required to submit to the Board of Postgraduate Studies within two (2) months, an independent written assessment report of the thesis indicating:
    i. Whether or not the thesis is adequate in form and content.
    ii. Whether or not the thesis reflects an adequate understanding of the subject and show display of original thought and significant contribution to knowledge.
    iii. Whether or not the thesis makes significant contribution in the existing knowledge.
    iv. Whether or not the Master of Science degree should be awarded.
e) Where the recommendation of the Board of Examiners is unanimous for or against the award of the MSc degree, and where such unanimous recommendation is consistent in all aspects with the reports of the external examiner and the results of the oral examination, the Director of the Board of Postgraduate Studies shall forward such recommendation to the Vice-Chancellor for approval on behalf of the University Senate.
   Procedure for

2.7.10. 2.5 Re-examination of revised thesis

a) Where recommendation of the Board of Examiners is not unanimous, or the recommendation is not consistent with recommendations from the board of examiners, it shall be referred to the full Board of Postgraduate Studies for an appropriate recommendation to the University Senate.
b) The University Senate may, on the advice of the Board of Examiners and Board of Postgraduate Studies permit a candidate to resubmit a thesis for re-examination in a revised form only once provided that a candidate whose thesis is referred under this sub-section shall be required to re-submit it within twelve months.

2.8. Course Evaluation

The evaluation of the Programme shall be according to the academic quality assurance policy of the university and such evaluation shall include all aspects of the academic programme such as:

(a) course contents, (b) instructional process, (c) infrastructure and equipment for delivery, (d) instructional and reference materials and (e) assessments.
The programme shall be evaluated at the end of every three (3) year cycle to establish strengths and weaknesses in the delivery of the programme and subsequently undertake revision of the programme, where necessary.
The evaluation of the programme shall be undertaken by an evaluation committee appointed by the University Senate according to the requirements of the Academic Quality Assurance Policy. The evaluation report with recommendations shall be submitted to the University Senate for deliberations.
Feedback on course evaluation shall be utilized in decision-making regarding the delivery of the programme.
Also, at the end of every semester during year 1 of study, the Department shall ensure that students' evaluation of the courses taught in the semester is conducted and results of the evaluation shall be used to improve the delivery of the course units.

2.9 Management and Administration of the Program

The management of the programme shall be vested with the relevant senior lecturer with at least a PhD within the Department of Agricultural Sciences. The lecturer shall be expected to provide the chairman of the department with regular updates on the delivery of the program, including progress of students admitted into the programme. The chair shall in turn brief the dean of the school. Subsequently, the Departmental and School's Academic Boards shall monitor the delivery of the program based on attainment of its intended goals and objectives and approve examination results.

The internal quality assurance of the programme shall be as per the existing Academic Quality Assurance Policy and procedures of South Eastern Kenya University.

2.10 Courses/ Units offered for the Programme

2.10.1 A distribution table of course units' summary

	Number	**Lecture hours**
Common university units	0	0
Core units (Include thesis)	13	945
TOTAL	13	945

2.11.2 A matrix of links between the course units and the programme learning outcomes

Table 3: The link between the course units and the programme learning outcomes (PLOs) per academic year.

ELO 1: Evaluate advances of approaches and practices in food value chain management.			
Year One		**Year Two**	
Units	Credit Hours	Units	Credit Hours
Food Value Chain Management	45		
Research methods in Agribusiness and Value chains	45		
Gender and Value Chain Management	45		
Sustainability of commodity and food value chains	45		
ELO 2: Apply acquired skills and knowledge in agri-preneurship and food processing			
Year One		**Year Two**	
Units	Credit Hours	Units	Credit Hours
Agripreneurship and Product Development	45	Thesis	180
Digital Technologies for Agri-food systems	45		
Food Quality Management	45		
Project Planning and Management	45		
Food Economics	45		
Food Processing Technology	45		
ELO 3: Design and carry out research on food value chains.			
Year One		**Year Two**	
Units	Credit Hours	Units	Credit Hours
Project Planning and Management	45	Thesis	180
Research methods in Agribusiness and Value chains	45		

Seminar in Agribusiness and Value Chain Management	45		
Crop, Livestock and Fish Value Chain Management	45		
Food Economics	45		
ELO 4: Design / or manage food value chain programs			
Year One		**Year Two**	
Units	Credit Hours	Units	Credit Hours
Project Planning and Management	45	Thesis	180
Gender and Value Chain Management	45		
Sustainability of commodity and food value chains	45		
Food Quality Management	45		
Digital Technologies for Agri-food systems	45		

2.10.3 A list of the courses of the programme

The following Table 4 shows the course units, which shall be offered to fulfil the learning outcomes of the programme. They are arranged in order of the academic years. The unit codes are indicative of the level of study. The core and unique units of the Master Science in Food Value Chain Management are shown with the code AFVC.

Year One Semester one

YEAR 1, SEMESTER ONE				
UNIT CODE	**TITLE**	**Lecture Hours**	**Practical Hours**	**Total**
AFVC 600	Food value chain management	45	0	45
AFVC 601	Food processing technology	30	15	45
AFVC 602	Research methods in agribusiness and value chains	45	0	45
AFVC 603	Agripreneurship and product development	45	0	45
AFVC 604	Food quality management	30	15	45

AFVC 605	Gender and value chain management	45	0	45
YEAR 1 SEMESTER TWO				
AFVC 606	Food economics	45	0	45
AFVC 607	Project planning and management	45	0	45
AFVC 608	Digital technologies for agri-food systems	30	15	45
AFVC 609	Sustainability of commodity and food value chains	45	0	45
AFVC 610	Crop, livestock and fish value chain management	45	0	45
AFVC 611	Seminars in agribusiness and value chain management	45	0	45
YEAR TWO				
AFVC 612	Thesis			315
TOTAL				

2.10.4 A list of the programme's courses to be taken by the students by quarter/trimester/semester per subject /discipline Courses will be taken in semesters as shown in table 4. above. A student will be expected to take 12 taught units in two semesters and thereafter utilize the remaining two (2) to carry out research and write a thesis. One lecturer can teach a maximum of two units in this program in the semester.

2.10.5 Total credit hours, lecture hours, contact hours and course units required for graduation. The minimum total credit hours required for graduation are 945.

2.11. Duration and Structure of the Program

The course units for the programme are listed under 2.10.3. All the courses are equivalent to one unit unless otherwise specified. A unit is defined as the equivalent of 45 one-hour lectures spread over four semesters. For this purpose, three hours of practical sessions or two hours of tutorials are equivalent to one-hour lecture. Therefore, the total credit hours of the programme are 915 taken in two academic years.

3.0 COURSE DESCRIPTION

YEAR ONE SEMESTER ONE

1. Food Value Chain Management

Purpose: To provide skills and knowledge required to manage food value chains

Expected Learning Outcomes

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

a) Demonstrate an understanding of the process of value chain analysis
b) Analyze the influence of market structure on value chain development
c) Discuss the common issues in value chain governance
d) Describe the models for value chain financing development

Course content

Concepts, principles and relevance of value chain approach. Value chain cycle. Value Chain Analysis: Introduction to value chain development; Key concepts in value chain analysis; Value chain analysis process; Mapping a value chain; Tools and techniques in value chain analysis; Case study: Value chain analysis. Market Analysis and Development: Introduction to market analysis; Supply, demand and price setting; Standards and certification; Analyzing competition. Market Linkages: Introduction to market linkages; Types of market linkages; Factors affecting success of linkages; Enabling environment in market linkages. Value Chain Governance: Introduction to value chain governance; Importance of value chain governance; Types of value chain governance; Analyzing value chain governance. Value Chain Financing: Introduction to Value Chain Financing; Type of Value Chain Finance; Instruments to promote agricultural value chain finance.

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment

Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials

Materials required include white-board, white-board marker, computer and projector.

Core reading materials

1. Gokhan Egilmez (Ed.) (2018). Agricultural Value Chain. IntechOpen ISBN-10 : 1789230063
2. Swati Malhotra, Alan de Brauw, Erwin Bulte, and Evgeniya Anisimova. (2021). Improving African agricultural value chains to boost production and revenue.
3. Alan de Brauw , Erwin Bulte. (2021). African Farmers, Value Chains and Agricultural Development.
4. John Stanton, Rosa Caiazza, Usha Iyer-Raniga, (Eds.) (2023). Agricultural Value Chains - Some Selected Issues ISBN978-1-83768-513-4.
5. Sapna A. Narula, S. P. Raj. (Eds.) (2023). Sustainable Food Value Chain Development: Perspectives from Developing and Emerging Economies.

Recommended reference materials

1. Konstadinos Mattas, George Baourakis, Constantin Zopounidis, Christos Staboulis. (Eds) (2024). Value Chain Dynamics in a Biodiverse Environment: Advances in Biodiversity, Sustainability, and Agri-food Supply Chain Development.
2. C. Sekhar and P. Muthupandi. (2023). Food Value Chain and Traceability
3. By Sander de Leeuw, Renzo Akkerman, Rodrigo Romero Silva (Eds.) (2024). Frontiers in agri-food supply chains: Frameworks and case studies.
4. Calvin Miller, Linda Jones. Calvin Miller, Linda Jones (2010). Agricultural Value Chain Finance: Tools and Lessons. Food and Agriculture Organization of the United Nations
5. Agribusiness Supply Chain Management. N. Chandrasekaran, G. Raghuram CRC Press, 2014.
6. . MA Bourlakis, PWH Weightman (2008). Food supply chain management.

Journals

1. Journal of Food Science
2. Food Microbiology journal
3. International Journal of Food Microbiology
4. Foods
5. Food policy
6. Journal of Arid Environments
7. Marine Policy
8. International Journal of Advanced Scientific Research and Innovation
9. Sustainability

2. Agripreneurship and Product Development

Purpose: To equip learners with skills and knowledge in product development and marketing

Expected learning outcomes

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

1. Generate a business idea
2. Develop business plan/business canvas model
3. Demonstrate understanding of the process of setting up an enterprise
4. Evaluate organizational behaviour
5. Analyze Consumer behaviour
6. Conduct business analysis

Course Description

Introduction to agripreneurship: Definition and importance of entrepreneurship; Types of entrepreneurship (intrepreneurship, entrepreneurship): Forms of agri-enterprises for running agribusiness organizations (small, medium, large); Qualities/skills needed for running the business. How to identify and generate business ideas: Sources of new ideas (research, emerging enterprises; Ideation process (brain storming, random association, etc); Enterprise selection. Process of setting up an enterprise: Legal requirements; Financial and economic requirements; Personnel requirements; Infrastructural requirements; Business location. Enterprise Management: Financial Management; Man-power/Personnel- HRM, change mgt, partner management; Machinery/Production; Materials; Resource mobilization in an enterprise. Product development:

Impetus to product innovation; New product development process. Marketing and Consumer behaviour: Marketing functions; Marketing institutions; Market research (Types of market information; Marketing mix; Marketing strategies; Market segmentation; Consumer needs; Types of consumers; Exogenous and endogenous influences on the buyer behaviour; Consumer purchasing process. Business law: laws and regulations governing agri-enterprise. Business Plan/Business Canvass model (proposal)

Mode of Delivery
Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment
Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials
Materials required include white-board, white-board marker, computer and projector.

Core Reading Materials

1. Arumugam, U., & Manida, M. (2023). Agripreneurship for Sustainable Economic Development in India. *ComFin Research*, *11*(4), 15-23.
2. Ranjan, M. S., Tandon, J. K., & Convener, M. B. A. (2022). Agripreneurship Advancement Creating Living for Indigenous Youth| Restrictions And Solutions.
3. Sriya, V., Dhanalakshmi, V., Sravani, V., & Deepak, G. S. Agribusiness Development and Entrepreneurship Training. Advances in Agriculture Extension, 176.
4. Usanga, U. J. (2021). Introduction to Agripreneurship. *Agricultural Technology for Colleges*, 638.

Recommended Reading Materials

1. Anozie, R. O., Okoye, F. U., & Usanga, U. J. (2021). Teaching, Mentoring & Developing Agripreneurs. Agricultural Technology for Colleges, 656.
2. Choudhary, B. B., Sharma, P., Phand, S., Gupta, G., & Sharma, R. K. (2021). Agripreneurship Development on Value Added Fodder Products [E-book]. Hyderabad: National Institute of Agricultural Extension Management & ICAR-Indian Grassland and Fodder Research Institute, Jhansi (UP).
3. Garima, Dhingra, A., Contumely, P., & Cerchione, R. (2023). Factors and activities considered by first generation Agripreneurs for Agri-business sustainable development: a study of Haryana, India. Sustainability, 15(9), 7109.
4. Sudharani, V. (2012). Entrepreneurship development. Hyderabad: College of Agriculture.(Study material AEXT 391).

Journals

1. International Journal of Scientific and Research Publications
2. Journal of Management Research and Development
3. Global Journal of Advanced Research
4. Journal of Agricultural Extension and Rural Development
5. Indian Journal of Agricultural Sciences

3. Research methods in Agribusiness and Value chains

Purpose: To familiarize students with concepts and principles of agribusiness and value chain research to enable them to conduct research in food value chain management

Expected Learning Outcomes

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

1. Apply essential elements of research process in agribusiness and value chains
2. Evaluate various types of research designs
3. Demonstrate competence in writing of research proposals
4. Undertake a research in value chains development.

Overview of Research Methods: Problem Identification and Research Design; Methods of Data Collection and Analysis; Developing Research Proposal; Scientific Communication and Writing. Research in Value Chains: The Point of Entry for Value Chain Analysis; Mapping Value Chains and Adding Critical Information to the Map; Product Segmentation; Benchmarking Production Efficiency; Governance of Value Chains as research Component; Gender Disaggregated Research in Value Chain. Value Chain Modeling: Equilibrium Model; Value Chain Optimization and Simulation; Game Theory Analysis/ Experimental Economics.

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment

Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials

Materials required include white-board, white-board marker, computer and projector.

Core reading materials

1. Creswell, J. W. (2002). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* Second Edition. New Delhi: Sage Publications Inc.
2. Hugos, M. H. (2024). *Essentials of supply chain management*. John Wiley & Sons.
3. Kombo, D. K. & Tromp, D. L. A. (2006). *Proposal and Thesis Writing*. Nairobi: Pauline Publications.
4. Legesse, B. (2014). Research Methods in Agribusiness and Value Chains. *School of Agricultural Economics and Agribusiness, Haramaya University*.
5. Masters, W. A., & Finaret, A. B. (2024). *Food Economics: Agriculture, Nutrition, and Health* (p. 476). Springer Nature.
6. Thakur, S., Wasnik, S. B., Sharma, P., Kush, B., & Nelson, R. (2024). *Agribusiness Management*. Taylor & Francis.

Recommended reference materials

1. Corallo, A., De Giovanni, M., Latino, M. E., & Menegoli, M. (2024). Leveraging on technology and sustainability to innovate the supply chain: a proposal of agri-food value chain model. *Supply Chain Management: An International Journal*, *29*(3), 661-683.

2. Finizola e Silva, M., Van Schoubroeck, S., Cools, J., Aboge, D. O., Ouma, M., Olweny, C., & Van Passel, S. (2024). Local actors' perspectives on sustainable food value chains: evidence from a Q-methodology study in Kenya. *Journal of Environmental Studies and Sciences*, *14*(1), 36-51.
3. Mutai, B. K. (2001). *How to Write Standard Dissertation: A systematic and simplified Approach*, First Edition. New York: Thelley Publications.
4. Petelin, R. & Durham, M. (2004). *The Professional Writing Guide: Writing well and knowing why*. Warried Wood: Robert Coco.
5. Peter, C. B. (1994). *A Guide to Academic Writing*. Eldoret: Zapf Chancery.
6. Rudestam, K. E. & Newton, R. A. (2001). *Surviving your Dissertation: A Comprehensive Guide*

Journals

1. British Food Journal
2. Journal of Agribusiness in Developing and Emerging Economies
3. Supply Chain Management
4. Journal of Agribusiness in Developing and Emerging Economies

4. Food Processing Technology

Purpose: To provide advanced knowledge and practical skills in food processing technologies

Expected Learning Outcomes

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

1. Analyse challenges in the field of food processing in order to propose appropriate solutions.
2. Develop new and improved food products for the general consumers and specialized groups.
3. Utilize knowledge and skills to manage food processing businesses.
4. Demonstrate understanding of safety and quality in food processing
5. Apply innovative skills in food processing technologies for sustainable development

Course content

Raw material processing and food preservation: Introduction to science of raw materials; Post harvesting physiology; Processing of plants and animal-based foods; Food preservation techniques. Product development and sensory evaluation: Introduction to food product development; Types of new food products; Stages in new foods product development; Sensory evaluation of food products. Food quality and safety: Biochemical and nutritional constituents of foods; Food microbiology; Food toxicology; Food additives; Functional foods; Food quality management. Food packaging: Introduction; Types and functions of packaging materials; Packaging requirements for different foods (environment, spoilage….)

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment

Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials

Materials required include white-board, white-board marker, computer and projector.

Core reading materials

1. Ali, S. A., & Fan, X. (Eds.). (2023). Handbook of food processing: Food preservation and shelf life. Wiley.
2. Bhandari, B., & Ziegler, G. R. (Eds.). (2023). Innovations in food processing technology. Wiley.
3. Clark, S., Partch, T., & Stewart, G. (2022). Food processing: Principles and applications. Wiley.
4. Fellows, P. J. (2023). Food processing technology: Principles and practice (4th ed.). Woodhead Publishing.
5. Galanakis, C. M. (Ed.). (2023). Sustainable food processing. Elsevier.
6. Varzakas, T., & Labropoulou, C. (Eds.). (2023). Handbook of food processing: Food processing and food engineering. CRC Press

Recommended reference materials

1. Hartmann, R., & Evans, S. (2024). Modern food processing: Trends and developments. Elsevier.
2. Hui, Y. H. (Ed.). (2022). Handbook of food safety engineering. Wiley-Blackwell.
3. Karwe, R. M., & Pan, N. S. (Eds.). (2024). Advances in food processing and preservation. Wiley.
4. Kumar, P., & Jain, S. (Eds.). (2023). Food processing and technology: Advances and trends. CRC Press.
5. Kumar, S., & Sharma, N. (Eds.). (2024). Emerging technologies in food processing. Academic Press.
6. Lee, J., & Kumar, P. (Eds.). (2023). Food processing and biotechnology: Trends and innovations. Springer.
7. Raheja, K. D., & Gupta, M. K. (2023). Food quality assurance: Principles and practices. Springer.
8. Yanniotis, S. G., & Kulkarni, M. A. G. (Eds.). (2022). Food engineering: Innovations and technologies. CRC Press.
9. Zhang, H., & Zhao, Y. (Eds.). (2024). Food processing and engineering: Applications and innovations. Academic Press.

Journals

1. International Journal of Food Science and Technology
2. African Journal of Food Science
3. Introduction to Food Engineering
4. Journal of Food Processing and Preservation
5. Journal of Nutrition & Food Sciences Open Access
6. Journal of Agricultural and Food Chemistry
7. Food Research International

5. Food Economics

Purpose: To expose learners to the theory and practice of fundamental issues impacting food security.

Expected Learning outcomes:
By the end of this course, the learner should be able to:
a) Apply the knowledge in the supply and demand dynamics of the food value chain
b) Demonstrate an understanding of business decisions and consumer behaviour that affect a country's food system.
c) Develop alternative economic policies relating to food security.
d) Analyze the effect of fiscal and monetary policies on access to food.

Course content
Food supply and food demand: price, trade, technological progress; Market failure and foodborne risks, asymmetric information and moral hazard; Information economics and policy: the market for news; Elements of behavioural economics: risk perception, risk attitudes and consumer behaviour under uncertainty. A taxonomy of food policies: market vs. information measures: Information policies and social marketing; Fiscal policies: taxes and subsidies; Monetary Policies; Inflation; Interest and exchange rates; Regulations and food standards; Trade measures and non-tariff barriers. Quantitative policy analysis and empirical case studies: economic models for policy analysis.

Mode of Delivery
Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment
Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials
Materials required include white-board, white-board marker, computer and projector.

Core Reading Materials

1. A. Barkley, (2016): The Economics of Food and Agricultural Markets, 2nd Edition.
2. Ali, S. A., & Fan, X. (Eds.). (2023). Handbook of food processing: Food preservation and shelf life. Wiley.
3. Bhandari, B., & Ziegler, G. R. (Eds.). (2023). Innovations in food processing technology. Wiley.
4. Bourlakis, M. A., & Weightman, P. W. (2004). Food Supply Chain Management.
5. Bourlakis, M. A., & Weightman, P. W. (2004). Food Supply Chain Management.
6. Melika Husic, Slavo Kukic & Muric Cicic (2012): Consumer Behaviour.
7. W.A. Masters and Amelia B. Finaret (2024): Food Economics: Agriculture, Nutrition and Health.

Recommended Reference Materials

1. Feller, A., Shunk, D. & Callarman, T. (2006). Value chains vs. supply chains. BP Trends, March 2006 (available at http://www.ceibs.edu/knowledge/papers/ images/20060317/2847.pdf).

2. Global Policy Report, (2024). The Economics of the Food System Transformation. Food System Economics Commission (FSEC).
3. Hobbs, J.E., Cooney, A. & Fulton, M. (2000). Value chains in the agri-food sector. Saskatoon, Saskatchewan, Canada, College of Agriculture, University of Saskatchewan.
4. Roosen, J. (2019): A Modern Guide to Food Economics.
5. Sanchez, A. (2024) World Food Policy, Vol. 10.

Journals

1. Journal of Economic Perspectives (American Economic Association)
2. Journal of Economic Review (Elsevier Publishing)
3. Food security Journal
4. Journal of Food Measurement and Characterization
5. Journal of Food service Business Research

6. Food Quality Management

Purpose: To provide learners with the skills and techniques for safeguarding product quality along the value chain

Expected Learning Outcomes

By the end of the course the learner should be able to:

(a) Demonstrate an understanding of key regulations governing food quality management.
(b) Describe the various contaminants in products along the value chain.
(c) Carry out laboratory studies for quality control measures.
(d) Apply the techniques relevant to assessing product quality.

Course Content

Total quality management principles & their application in ensuring product quality & safety. Development of food safety programs & auditing of these. International & national food regulatory systems. The development of & scientific basis for food regulations. Food Quality Management Systems with emphasis on Hazard Analysis Critical Control Point (HACCP) concept. Personal Hygiene. Cleaning. Water supply. Chemical and biological contaminants in food and water. Food poisoning. Infection Biology. Epidemiology. Investigation of food-borne outbreaks. Quality planning, quality control and quality assurance. Traceability and emergency preparedness. Deviations and corrective measures. Auditing and documentation. Certification and accreditation. Quality costs. Quality improvement. Environmental hygiene and management. Internal control. Current issues in food safety. Applied risk analysis.

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment

Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials

Materials required include white-board, white-board marker, computer and projector.

Core Reading Materials

1. Alli, I. (2003). Food quality assurance: principles and practices. CRC Press.
2. Kafetzopoulos, D. P., & Gotzamani, K. D. (2014). Critical factors, food quality management and organizational performance. Food control, 40, 1-11.
3. Kumar, S. (2024). Food Quality Management: Textbook for UG & PG Students.
4. Luning, P. A., Marcelis, W. J., & Jongen, W. M. (2002). Food quality management: a techno-managerial approach (pp. 323pp).

Recommended Reading materials

1. Barendsz, A. W. (1998). Food safety and total quality management. *Food control*, *9*(2-3), 163-170.
2. Bilska, A., & Kowalski, R. (2014). Food Quality and Safety Management. *LogForum*, *10*(3).
3. Early, R. (2012). *Guide to quality management systems for the food industry*. Springer Science & Business Media
4. Luning, P., & Marcelis, W. (2020). Food quality management: technological and managerial principles and practices. In *Food quality management*. Wageningen Academic.

Journals

1. African Journal of Food, Agriculture, Nutrition and Development,
2. Journal of Small Business and Enterprise Development,
3. Slovak Journal of Food Sciences,
4. International Food Research Journal

7. Gender and Value Chain Management

Purpose: To equip learners with skills and knowledge on role of gender equity in food value chain management

Expected Learning Outcomes

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

(a) Explain the policy related issues in gender mainstreaming systems
(b) Analyze gender sensitive indicators in food value chain management
(c) Demonstrate an understanding of gender equity in promoting food Value Chains
(d) Demonstrate the ability to integrate the aspects of gender in food value chain management

Course content

Gender and Value Chain Interventions: The Concept of Gender; Poverty and Gender Inequality in Agriculture; Gender Division of Labour; Practical and Strategic Gender Needs; Facilitating Gender Equitable Value Chain Development. Gender Analysis Framework / Tools: Harvard Analytical Framework; The Moser Framework; The Gender Analysis Matrix (GAM) Framework; Women's Equality and Empowerment Framework; The Capacities and Vulnerabilities Analysis (CVA) Framework; The Social Relations Approach Framework (SRA). Gender mainstreaming in value chain management: Gender Sensitive Indicators and Why They are Useful; Why Focus on Gender Equity in Agricultural Value Chains; Gender Mainstreaming Systems. Policy Issues Related with Gender: The Issue of Gender in International and National Policy Packages: Gender-

Related Sustainable Development Goals; Policy Briefs and Case Studies on Gender and Value Chain Development

Mode of Delivery
Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment
Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials
Materials required include white-board, white-board marker, computer and projector.

Core Reading Materials

1. Coles, C., & Mitchell, J. (2011). Gender and agricultural value chains: A review of current knowledge and practice and their policy implications.
2. Laven, A., & Verhart, N. (2011). Addressing gender equality in agricultural value chains: Sharing work in progress. *Nijmegen, The Netherlands. 17pp*.
3. Quisumbing, A., Heckert, J., Faas, S., Ramani, G., Raghunathan, K., Malapit, H., & pro-WEAI for Market Inclusion Study Team Hazel Malapit Jessica Heckert Sarah Eissler Simone Faas Elena Martinez Emily Myers Audrey Pereira Agnes Quisumbing Catherine Ragasa Kalyani Raghunathan Deborah Rubin Greg Seymour. (2021). Women's empowerment and gender equality in agricultural value chains: evidence from four countries in Asia and Africa. *Food Security*, *13*, 1101-1124.
4. Rubin, D., & Manfre, C. (2014). Promoting gender-equitable agricultural value chains: Issues, opportunities, and next steps. *Gender in agriculture: Closing the knowledge gap*, 287-313.

Recommended Reading materials

1. Farnworth, C. R. (2011, September). Gender-aware value chain development. In *UN Women Expert Group Meeting: Enabling Rural Women's Economic Empowerment: Institutions, Opportunities and Participation, Accra, Ghana* (pp. 20-23).
2. Kini, J. (2022). Gender-aware inclusive value chain: A theoretical perspective. *Frontiers in Sustainable Food Systems*, *6*, 1047190.
3. Olaomo, O. K., & Molnar, J. J. (2022). Building an Inclusive Value Chain: Gender Participation in Cassava Marketing and Processing in Nigeria. *Environ. Sci. Ecol. Curr. Res*, *3*, 1078.
4. Pyburn, R., & Kruijssen, F. (2020). Gender dynamics in agricultural value chain development: Foundations and gaps. *Routledge handbook of gender and agriculture*, 32-45.

Journals

1. Journal of Cleaner Production
2. Enterprise Development and Microfinance Journal.

3. Journal of rural studies
4. Frontiers in Sustainable Food Systems

8. Project Planning and Management

Purpose: To equip learners with knowledge and skills to undertake Food Value Chain Project Planning Management, Monitoring, Evaluation and Learning.

Expected Learning Outcomes

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

1. Apply logical framework approach to agricultural project planning
2. Conduct Cost Benefit Analysis of agricultural development projects
3. Demonstrate an understanding of how to monitor and evaluate food value chain projects
4. Demonstrate the use of appropriate project scheduling techniques.
5. Develop performance measurement framework for a project proposal.
6. Undertake impact assessment of VC and market linkages

Course content

The Project Concept; Project Life Cycle; Agriculture Value Chain Project Design: Formulation of the project goal statement; Project causal pathway design; Development of a logical framework to Project Planning; Agricultural Research Planning; Strategic Planning; Economic Analysis of Agricultural Development Projects through CBA; Welfare Economics/Political Economy of Project Analysis and Appraisal; Project Scheduling Techniques; Monitoring and Evaluation of VC Development Projects: Selection of Key Indicators; Development of Performance Measurement Framework; Evaluation of VC and Market Linkages Projects; Impact Assessment of VC and Market Linkages Projects.

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment

Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials

Materials required include white-board, white-board marker and projector.

Core reading materials

1. Bourlakis, M. A., & Weightman, P. W. (2004). Food Supply Chain Management.
2. Burke, R. (2013). Project management: planning and control techniques. John Wiley & Sons.
3. Hugos, M. H. (2024). *Essentials of supply chain management*. John Wiley & Sons.
4. Sapna A. Narula, S. P. Raj (2023). *Sustainable Food Value Chain Development: Perspectives from Developing and Emerging Economies*. Springer Singapore
5. Pullman, M., & Wu, Z. (2021). *Food supply chain management: building a sustainable future*. Routledge.

Recommended reference materials

1. Akroyd, H. D. (2017). *Agriculture and rural development planning: A process in transition*. Routledge.
2. Akkerman, R., & Cruijssen, F. (2024). Food loss, food waste, and sustainability in food supply chains. In *Sustainable supply chains: a research-based textbook on operations and strategy* (pp. 219-239). Cham: Springer International Publishing.
3. Anandajayasekeram, P., Van Rooyen, C. J., & Liebenberg, F. (2004). *Agricultural project planning and analysis: a sourcebook*. University of Pretoria, South Africa
4. Graef, F., Sieber, S., Mutabazi, K., Asch, F., Biesalski, H. K., Bitegeko, J., & Uckert, G. (2014). Framework for participatory food security research in rural food value chains. *Global Food Security*, *3*(1), 8-15.
5. Petit, G., Sablayrolles, C., & Yannou-Le Bris, G. (2018). Combining eco-social and environmental indicators to assess the sustainability performance of a food value chain: A case study. *Journal of Cleaner Production*, *191*, 135-143.

Journals

1. International Journal of Physical Distribution & Logistics Management
2. Sustainability
3. Journal of Cleaner Production
4. Global Food Security

9. Seminar in Agribusiness and Value Chain Management

Purpose: To impart knowledge on contemporary issues in agribusiness and value chain management

Expected Learning Outcomes:

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

a) Demonstrate a clear understanding of value chain management
b) Apply the skills acquired in addressing challenges faced in the management of value chains
c) Evaluate the effectiveness of the current approaches in agribusiness management
d) Analyze existing economic policies governing agribusiness and value chain management

Course Content

The course is expected to cover topics related to current issues and advances in agribusiness and value chain management such as policies, technologies, economic, social and environmental feasibilities as well as challenges and opportunities at national and international levels.

Mode of Delivery

Course delivery will be through lectures, group discussions, case studies, demonstrations and illustrations.

Course Assessment

Assessment will include end of semester project examination (60%) and assignments, case studies or group presentations for assessment (40%).

Instructional Materials

Materials required include white-board, white-board marker, computer and projector.

Core Reading Materials

1. Alan de Brauw, Erwin Bulte (2021): African Farmers, Value Chains and Agricultural Development.
2. Barnard, F. (2019): Agribusiness Management.
3. Beierlein, J. (2012): Introduction to Agribusiness Management. 4th Edition
4. Gokhan Egilmez (2018): Agricultural Value Chain Hardcover. Publisher: IntechOpen (April 26, 2018) ISBN-10 : 1789230063
5. John Stanton, Rosa Caiazza, Usha Iyer-Raniga (2023): Agricultural Value Chains - Some Selected Issues, ISBN978-1-83768-513-4.
6. Swati Malhotra, Alan de Brauw, Erwin Bulte, and Evgeniya Anisimova (2021): Improving African agricultural value chains to boost production and revenue.
7. Thakur N. (2023): Innovative Strategies in Agribusiness Management.

Recommended Reference Materials

1. Collins, R., Dent, B. & Bonney, L. (2015): A Guide to Value Chain Analysis and Development for Overseas Development Assistance Projects.
2. Dent, B., Collins, R. (2021): A manual for agribusiness value chain analysis in developing countries.
3. Devaux, André, ed. Torero, Maximo, ed. Donovan, Jason, ed. Horton, Douglas E., ed. (2016): Innovation for inclusive value-chain development: Successes and challenges. International Food Policy Research Institute (IFPRI).
4. Hellin (2006): Guidelines for Value Chain Analysis.
5. Kaplinsky, R. (2000): A Handbook for Value Chain Research.

Journals

1. Journal of Economic Perspectives (American Economic Association)
2. Journal of Economic Review (Elsevier Publishing)
3. Journal of Agricultural Economics
4. Journal of Value Chain Analysis
5. Sustainability

10. Crop, Livestock and Fish Value Chain Management

Purpose: To impart skills and knowledge required to manage key food value chains

Expected Learning Outcomes

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

a. Demonstrate an understanding of the post-harvest changes taking place in crop products
b. Describe the types of losses in key food value chains
c. Describe the processing techniques for key food value chains
d. Discuss quality assurance measures in key food value chains

Principles of crops, livestock and fisheries production and their supply chains; processing methods of agricultural products; post-harvest changes taking place in crop products; estimating the post-harvest losses in crop products; types of losses in livestock and fisheries products resulting from

poor processing and preservations; post-harvest and processing facilities for crops, livestock and fisheries products; estimating the viability of different agricultural products processing techniques; monitoring and evaluation of safety and quality assurance measures in harvesting, transporting, processing, storage, grading, packaging, standardization and marketing of agricultural products locally and abroad; agro-logistics requirements of crops, livestock, and fisheries products; political, environmental, social, technological, legal, and economic (PESTLE) analysis for crop, livestock and fisheries value chain management.

Mode of Delivery
Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment
Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials
Materials required include white-board, white-board marker and projector.

Core reading materials
1. Gokhan Egilmez (Ed.) (2018). Agricultural Value Chain Hardcover. Publisher. IntechOpen ISBN-10: 1789230063
2. Swati Malhotra, Alan de Brauw, Erwin Bulte, and Evgeniya Anisimova (2021). Improving African agricultural value chains to boost production and revenue.
3. Alan de Brauw, Erwin Bulte (2021) African Farmers, Value Chains and Agricultural Development.
4. John Stanton, Rosa Caiazza, Usha Iyer-Raniga. (Eds.) (2023). Agricultural Value Chains - Some Selected Issues.
5. Krishna M. Singh, M. Meena, R. Singh (2012). Livestock Value Chains: Prospects, Challenges and Policy Implications for Eastern India.
6. Sapna A. Narula, S. P. Raj (Eds.) (2023). Sustainable Food Value Chain Development: Perspectives from Developing and Emerging Economies.

Recommended reference materials
1. Calvin Miller, Linda Jones (2010). Agricultural Value Chain Finance - Tools and Lessons. . Publisher: Food and Agriculture Organization of the United Nations (FAO), Practical Action Publishing Ltd.
2. Benjamin Dent, Ray Collins (2021). A manual for agribusiness value chain analysis in developing countries.
3. Kurtz, Julie E.; Mitik, Lulit; and Zaki, Chahir. (2021). African trade in livestock products and value chains. In Africa agriculture trade monitor. Bouët, Antoine; Tadesse, Getaw; and Zaki, Chahir (Eds.). Chapter 4, Pp. 85-133. Kigali, Rwanda; and Washington, DC: AKADEMIYA2063; and International Food Policy Research Institute (IFPRI).
4. Kwame Oppong-Anane (2016). Review of the livestock/meat and milk value chains and policy influencing them in Ghana. Publisher FAO.

5. Devaux, André, ed. Torero, Maximo, ed. Donovan, Jason, ed. Horton, Douglas E., (Eds.). (2016). Innovation for inclusive value-chain development: Successes and challenges. International Food Policy Research Institute (IFPRI).
6. Mark Polycarp (2016). Analysis of Fish Value Chain Paperback. Publisher: LAP LAMBERT Academic Publishing. ISBN-10: 3330010398.
7. Trond Bjorndal, Anna Child, Audun Lem (2014). Value chain dynamics and the small-scale sector Policy recommendations for small-scale fisheries and aquaculture trade. ISBN 978-92-5-108178-5 E-ISBN 978-92-5-108179-2 (PDF) © FAO.

Journals

1. Journal of Food Science
2. Food Microbiology journal
3. International Journal of Food Microbiology
4. Foods
5. Food policy
6. Journal of Arid Environments
7. Marine Policy
8. International Journal of Advanced Scientific Research and Innovation
9. Sustainability
10. Fishes

11. Digital Technologies for Agri-Food Systems

Purpose: To equip students with cutting-edge knowledge and practical skills in applying digital technologies in the agri-food sector

Expected learning outcomes

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

1. Demonstrate an understanding of the role of digital technologies within the agri-food value chain
2. Apply digital technologies for improving precision agriculture
3. Apply blockchain technology in enhancing food safety within the agri-food value chain
4. Apply digital platforms to enhance agricultural extension services
5. Analyze the role of digital marketplaces in the agri-food chain

Course content

Introduction to Digital Technologies in Agri-food Value Chain Systems: Overview of digital technologies in agriculture; Digital transformation in agri-food systems: global vs *country* context; Challenges and opportunities in African agriculture. Data Science and Analytics for Agri-food Value Chain Systems: Principles of data science in agri-food value chain systems; Remote sensing and GIS for precision agriculture; Big data analytics and its application in crop forecasting and pest management. IoT and Sensor Technologies in Agri-food Value Chain Systems: Introduction to IoT and sensors in farming; Design and deployment of sensor networks for soil, climate, and crop monitoring; Data management and analysis for informed decision-making. Smart Farming and Precision Agriculture: Principles of precision agriculture; Digital tools and technologies for site-specific crop management; Case studies: Success stories of precision farming in *country*.

Agricultural Robotics and Automation: Overview of robotics in agriculture; Drones in crop monitoring and spraying; Autonomous tractors and robotic harvesters: Prospects for *country*. Blockchain for Traceability in the Agri-Food Chain: Introduction to blockchain technology; Applications of blockchain for food safety and traceability; Case studies on blockchain adoption in *country* agri-food systems. Digital Extension Services and Farmer Digital Literacy: Digital platforms for agricultural extension services; Strategies for enhancing digital literacy among farmers; Role of mobile technologies in reaching remote farmers. Digital Platforms for Market Access and Agri-Finance: Digital marketplaces for enhancing access to markets for smallholder farmers; Digital financial services (DFS) in agriculture: Opportunities and challenges; The role of mobile technology in providing agricultural advisory services. Innovation and Entrepreneurship in Agri-Tech: Ecosystem for agri-tech startups in *country*; Funding and scaling agri-tech solutions; Policy and regulatory environment for agri-tech innovation

Mode of Delivery
Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment
Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials
Materials required include white-board, white-board marker, Insect specimens, dissecting kit, computer and projector.

Core reading materials

1. "Digital Agriculture: Concepts and Strategies" by Ali Gholami
2. "Digital Transformation in Agriculture" edited by Luiz Moutinho, Paulo Cortez, & Begoña Pino
3. "Data Science for Agriculture" by Katharina A. Schramm & Robert P. Shumway
4. "Big Data Analytics in Genomics" edited by Ka-Chun Wong, David Zhang, & Tao Jiang
5. "Internet of Things in Agriculture" edited by Jyotir Moy Chatterjee & Debanjan Das
6. "Wireless Sensor Networks for Agriculture" by Umesh Kumar Singh & Dharma P. Agrawal
7. "Precision Agriculture Technology for Crop Farming" edited by Qin Zhang & Heping Zhu

Recommended reference materials

1. "Smart Farming Technologies for Sustainable Agricultural Development" edited by Ashok Kumar & Anupam Mishra
2. "Agricultural Automation: Fundamentals and Practices" by Qin Zhang & Heping Zhu
3. "Robotics in Agriculture and Forestry" edited by Dan Zhang, Yan Li, & Srikanta Patnaik
4. "Blockchain for Business Applications" by Vincenzo Morabito
5. "Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World" by Don Tapscott & Alex Tapscott
6. "Digital Technologies for Agricultural and Rural Development in the Global South" edited by Torbjörn Fredriksson

7. "Agricultural Extension Reforms in South Asia: Status, Challenges, and Policy Options" edited by David J. Spielman & Rajju R. Vyas
8. "Digital Finance: The New Frontier" edited by Douglas W. Arner, Janos Barberis, & Ross P. Buckley
9. "Digital Marketing in the Food Sector" by Monika Koller
10. "Innovative Business Models for Smallholder Farmers: A Case Study of Agricultural Entrepreneurs in Africa" by Catherine Mungai
11. "Startup Opportunities: Know When to Quit Your Day Job" by Sean Wise and Brad Feld

Journals

1.
2.
3.
4.
5.

12. Sustainability of commodity and food value chains

Purpose: To equip learners with skills to apply principles of sustainable food production and agro-ecosystems management in food value chains.

Expected Learning Outcomes

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

a. Apply skills and knowledge of sustainable food production practices
b. Analyze the principles that guide sustainable food value chain development
c. Demonstrate an understanding of sustainable energy use in food value chains
d. Integrate socio-ethical considerations in food production

Course Content

Introduction to Sustainability and Food Systems: Definition of sustainability; Overview of the food value chain; Importance of sustainable food production. Sustainable energy and Food value chain: Energy consumption in agriculture; Greenhouse gas emissions from food systems; Production (solar, wind, and biomass energy in agriculture); Energy-efficiency (production, processing and transportation). Sustainable Practices in food value chain: Agroecology; Organic farming techniques; Water usage and pollution in food production; Precision agriculture; Smart farming technologies; Cold chain management and food preservation; Sustainable packaging and distribution systems. Food Waste Reduction and Resource Management: Causes and consequences of food waste; Strategies for reducing food loss and waste; Resource recovery and circular economy approaches. Ethical and Social Considerations in Food Production: Fair trade and ethical sourcing; Labor rights and social justice in agriculture; Environmental Standards; Cost-benefit analysis of sustainable practices; Market incentives for sustainability. Case Studies and Best Practices. Project Work and Présentations

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment
Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials
Materials required include white-board, white-board marker and projector.

Core reading materials

1. Altieri, M.A., Nicholls, C.I., Henao, A. & Lana, M.A. (2015). Agro ecology and the design of climate change-resilient farming systems. *Agronomy for Sustainable Development*, 35(3): 869-90.
2. Antle, J.M. & Capalbo, S.M. (2010). Adaptation of Agricultural and food systems to climate change: An economic and policy perspective. *Applied Economic Perspectives and Policies*, 32(3): 386-416.
3. Bockel, L. & Schiettecatte, L.S. (2017). Life Cycle analysis and the carbon footprint of coffee value chains. Rome.
4. Gokhan Egilmez (2018): Agricultural Value Chain Hardcover. Publisher: IntechOpen (April 26, 2018) ISBN-10 : 1789230063
5. John Stanton, Rosa Caiazza, Usha Iyer-Raniga (2023): Agricultural Value Chains - Some Selected Issues, ISBN978-1-83768-513-4.
6. Lipper, L., Thornton, P., Campbell, B.M., Baedeker, T., Braimoh, A., Bwalya, M., Caron, (2014). Climate-smart agriculture for food security. *Nature Climate Change*, 4(12): 1068–1072

Recommended reference materials

1. Dent, B., Collins, R. (2021): A manual for agribusiness value chain analysis in developing countries.
2. Collins, R., Dent, B. & Bonney, L. (2015): A Guide to Value Chain Analysis and Development for Overseas Development Assistance Projects.
3. Feller, A., Shunk, D. & Callarman, T. 2006. Value chains vs. supply chains. BPTrends, March 2006 (available at http://www.ceibs.edu/knowledge/papers/ images/20060317/2847.pdf).
4. Hobbs, J.E., Cooney, A. & Fulton, M. 2000. Value chains in the agri-food sector. Saskatoon, Saskatchewan, Canada, College of Agriculture, University of Saskatchewan.
5. "Precision Agriculture Technology for Crop Farming" edited by Qin Zhang & Heping Zhu
6. "Smart Farming Technologies for Sustainable Agricultural Development" edited by Ashok Kumar & Anupam Mishra

Journals

1. African Journal of Food, Agriculture, Nutrition and Development
2. African Journal of Economic and Sustainable Development
3. International Journal of Agricultural Sustainability
4. British Food Journal
5. Global Environmental Change

Year 2

13. Research and Thesis

Purpose: To identify and innovatively solve societal problem related to food value chain management

Expected Learning Outcomes

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

1. Apply acquired skills to write a scientific proposal
2. Conduct scientific research
3. Disseminate research findings
4. Defend research work during an oral examination

Course Content

Each student, in consultation with supervisors, will choose a relevant topic in Food Value Chain Management. Before embarking on research, the student will be required to prepare a proposal, which will be approved by the department. At the end of the research, the candidate will write and submit a thesis for examination according to the regulations of the Board of Postgraduate Studies of South Eastern Kenya University.

Mode of Delivery

Course delivery will be through lectures, class discussions, demonstrations and illustrations and laboratory sessions.

Course Assessment

Assessment will include end of semester examination (60%) and continuous assessment tests (40%).

Instructional Materials

Materials required include white-board, white-board marker, computer and projector.

Core reading materials

1. Centria University of Applied Sciences (2016). Guide for Thesis and Academic Writing. Publisher: Centria University of Applied Sciences. ISBN: 978-952-7173-06-0.
2. Ndalahwa, M. M (2019). Practical Handbook to Dissertation and Thesis Writing. NMM Printers. ISBN: 978-9976-59-470-6
3. Oliver P. (2014). Writing your thesis. SAGE Publications Ltd. ISBN: 9781446294994
4. Harman, E., Montagnes, I., McMenemy, S., & Bucci, C. (Eds.). (2003). The Thesis and the Book: A Guide for First-Time Academic Authors. University of Toronto Press. http://www.jstor.org/stable/10.3138/9781442689350

Recommended reference material

1. Hiba Mohamed Elawad (2017). Writing a Scientific Research Proposal. https://www.researchgate.net/publication/312534529 DOI: 10.13140/RG.2.2.14627.04642.
2. Ranjit Kumar (2011). Research Methodology: A step-by-step guide for beginners. 3rd Edition. SAGE Publishers. Los Angeles/London/New Delhi/Singapore/Washington DC.
3. Ridley, D. (2008). The literature Review; a step-by-step guide for students. Sage Publishers, London. Wolcott, H.F. (2001). Writing up qualitative research, 2nd Edition. Sage Publishers, London.

Journals

1. Supply Chain Management: An International Journal
2. British Food Journal
3. Journal of Agribusiness in Developing and Emerging Economies
4. Supply Chain Management
5. Journal of Agribusiness in Developing and Emerging Economies

4.0 APPENDICES

4.1 Appendix I: Physical facilities

Facility	Quantity	Capacity	Usage
Postgraduate ICT lab	1	50	Postgraduate students
Lecture rooms	Over 20	30 each	shared
Lecture offices	4	Each 4	Staff Computer
Internet access	Wireless	> 1500	All students
Other ICT Laboratory	3	100	Shared

4.2 Appendix II: Equipment and Teaching Materials

S/N0.	Item	Quantity	Description
1.	Desktops	200	Shared
2.	Projectors	>r 10	Epson, shared
3.	Public Address system 1 Shared	1	Shared
4.	Server Room	1	-
5.	Lecture Theatres	2	Capacity of over 200

4.3. Appendix III: Core Textbooks

4.4 Appendix IV: Academic staff

S/N	Staff Name	Discipline	Academic rank	Teaching Experience (Years)
1.				
2.				
3.				
4.				

S/N	Staff Name	Discipline	Academic rank	Teaching Experience (Years)
4.				
5.				
6.				
7.				
10.				
11.				

4.5 Appendix V: Technical/support staff

S/N	Staff Name	Discipline	Academic rank	Work Experience (Years)
1.				
2.				
3.				
4.				

4.6 Appendix VI: SEKU/MR/OP/033: Procedure for programme development and review

AUTHORIZATION: This procedure has been issued under the authority of: DVC- ARSA	
TITLE/POSITION:	DVC- ARSA
SIGNATURE:	
DATE OF ISSUE:	JANUARY 2017
DOCUMENT CONTROL	
ISSUE NO	03
REVISION NO	02
Controlled issue of this procedure will be final in case of dispute	
SEKU	DVC-ARSA

1.0 PURPOSE

To ensure that demand driven programs are developed in accordance with the University regulations and CUE academic programs quality assurance guidelines

2.0 SCOPE

The procedure covers all aspects of the development of academic programs from training needs assessment up to approval by the University.

3.0 REFERENCES

1. SEKU Quality Manual **SEKU/MR/QM/01**
2. SEKU Academic Programs Quality Assurance Policy **SEKU/ARSA/ACD/15**
3. CUE Academic Programs Quality Assurance Guidelines
4. SEKU Code of Conduct and Professional Ethics

4.0 TERMS DEFINITIONS AND ABBREVIATIONS

VC – VICE CHANCELLOR
DVC – DEPUTY VICE CHANCELLOR
ARSA- ACADEMIC RESEARCH AND STUDENT AFFAIRS
ASA – ACADEMIC AND STUDENT AFFAIRS
CODS – CHAIRMAN OF DEPARTMENTS
CUE – COMMISSION FOR UNIVERSITY EDUCATION
ER – EXTERNAL REVIEWER

5.0 RESPONSIBILITIES

The Dean and the CODs shall have the principal responsibility of ensuring that the procedure is fully implemented.

6.0 PROCEDURE DETAILS

6.1. Program development.

6.1.1. The Departmental Board identifies training or academic need and discusses its relevance to the community.

6.1.2. The Departmental Board Constitutes a Drafting Committee headed by a member of staff from the Department with good knowledge and specialization in the area.

6.1.3. The Drafting Committee, develops the Programme with its Regulations and Syllabus in consultations with relevant stakeholders, specialists and other University Departments

6.1.4. The Drafting Committee tables the Draft Programme in the Departmental Board for discussion and identification of at least three (3) external peer reviewers, who are asked to forward their CVs.

6.1.5. The COD forwards the recommended CVs of at least two ER's to the DVC-ARSA for appointment.

6.1.6. The COD sends the Discussed Draft Programme to the ER's who makes recommendations and sends the programme back to the COD who forwards a copy to DVC -ARSA through the school Dean within one month.

6.1.7. The COD tables the ER report to the Departmental Academic Board for discussion and action and thereafter forwards to the School Academic Board for discussions and recommendations.

6.1.8. The Dean Forwards the Programme to DVC-ARSA for tabling in Deans Committee after which it is tabled through DVC- ARSA to the Senate for approval.

6.2. Program review

6.2.1. The COD calls for a departmental Board meeting to discuss need to review a program.

6.2.2. The Departmental Board Constitutes a review Committee headed by a member of staff from the Department with good knowledge and specialization in the area.

6.2.3. The review Committee, consultants with relevant stakeholders, specialists, and other University Departments

6.2.4. The review Committee tables the Programme with comments in the Departmental Board for discussion and identification of at least three (3) external peer reviewers, who are asked to forward their CVs.

6.2.5. The COD forwards the recommended CVs of at least two ER's to the DVC-ARSA for appointment.

6.2.6. The COD sends the Discussed Programme to the ER's who makes recommendations and sends the programme back to the COD.

6.2.7. The COD forwards a copy to DVC – ARSA through the school Dean for tabling in Deans Committee.

6.2.8. The program is tabled in Senate for approval.

4.7 Appendix VII: SEKU/MR/OP/ 082. Procedures for credit transfer

AUTHORIZATION: This procedure has been issued under the authority of: DVC - ARSA	
TITLE:	DVC- ARSA
SIGNATURE:	
DATE OF ISSUE:	JANUARY 2017
DOCUMENT CONTROL	
ISSUE NO	03
REVISION NO	02
Controlled issue of this procedure will be final in case of dispute	
SEKU	DVC-ARSA

1.0 Purpose

To outline the steps undertaken in processing and awarding of credit transfer

2.0 Scope

This includes; Internal and External Credit Transfer

3.0References

SEKU ISO QMS Manual
SEKU Examination Rules and Regulations
SEKU Service Charter
SEKU Statutes

4.0 Definition of terms

For the purpose of this procedure, the definition in SEKU ISO QMS will apply.

5.0 Responsibilities

The DVC –ARSA shall ensure this procedure is implemented.

6.0 PROCEDURE DETAILS

6.1 Internal Credit Transfer

6.1.1 The Registrar (ASA) receives a written request by a student.

6.1.2 Examination Officer with guidance of Registrar (ASA) writes to the Dean of the School to provide the students marks.

6.1.3 Upon receiving the marks, the examination officer sends the marks to the Dean where the student has moved to requesting for recommendation on the credit transfer.

6.1.4 The Current Dean of School then writes to Registrar (ASA) giving the requested recommendation.

6.1.5 Based on the recommendation from the current School, the registrar writes to the Student informing him/her on the credits earned.

6.1.6 Registrar (ASA) writes to the Dean of School to incorporate the credits earned in the student's data base.

6.2 External Credit Transfer

6.2.1 The Registrar (ASA) receives a written request by a student.

6.2.2 The Registrar (ASA) writes to the University where the student is transferring from requesting for the student Academic records.

6.2.3 Upon receiving the student's grades and marks the registrar (ASA) forwards to the Dean of School for credit transfer recommendation.

6.2.4 The Dean of the School on behalf of Deans Committee makes recommendation on the credits to be given.

6.2.5 The registrar (ASA) writes to the student on the approved credits.

6.2.6 Registrar (ASA) writes to the Dean of the School to incorporate the bought credits in the student Database/records.

4.8 Appendix VIII: SEKU/MR/OP/ 083 Procedures for appeals on examination results

AUTHORIZATION: This procedure has been issued under the authority of: DVC - ARSA	
TITLE:	DVC- ARSA
SIGNATURE:	
DATE OF ISSUE:	JANUARY 2017
DOCUMENT CONTROL	
ISSUE NO	03
REVISION NO	02
Controlled issue of this procedure will be final in case of dispute	
SEKU	DVC-ARSA

1.0 Purpose
To outline the steps undertaken in processing appeals mechanism on examination results

2.0 Scope
This includes Remarking, verification of results.

3.0 **References**
SEKU ISO QMS Manual
SEKU Examination Rules and Regulations
SEKU Service Charter
SEKU Statutes

4.0 Definition of terms
For the purpose of this procedure, the definition in SEKU ISO QMS will apply.

5.0 Responsibilities
The DVC –ARSA shall ensure this procedure is implemented.

6.0 PROCEDURE DETAILS

6.1 Remarking

6.1.1 Registrar (ASA) receives a written request from a student.

6.1.2 Once the remarking is approved, Registrar (ASA) writes to the student requesting for remarking fee for the remarking to be done.

6.1.3 After the student has paid the Remarking fee, Registrar (ASA) writes to the Chairman of the Department to appoint the examiner.

6.1.4 After remarking, the Chairman of the department forwards the marks to the Registrar (ASA).

6.1.5 Registrar (ASA) prepares a brief to Vice-Chancellor to approve the new marks on Behalf of the Senate.

6.1.6 Registrar (ASA) upon approval of the new marks writes to the Dean of School to implement the new student marks.

6.1.7 Registrar (ASA) writes to the student informing her/him of the new marks.

6.2 Verification of results

6.2.1 Registrar (ASA) receives a written request from a student.

6.2.7 Examination officer with guidance of Registrar (ASA) writes to the dean of School to verify the student's results status. Upon verification, Registrar (ASA) writes to the student on his/her examination results status on the student Database/records.

4.9 Appendix IX: Master of Science in Food Value Chain Situational Analysis

Appendix V: SEKU/MR/OP/ 082. Procedures for credit transfer

AUTHORIZATION: This procedure has been issued under the authority of: DVC - ARSA	
TITLE:	DVC- ARSA
SIGNATURE:	
DATE OF ISSUE:	JANUARY 2017
DOCUMENT CONTROL	
ISSUE NO	03
REVISION NO	02
Controlled issue of this procedure will be final in case of dispute	
SEKU	DVC-ARSA

3.0 Purpose
To outline the steps undertaken in processing and awarding of credit transfer

4.0 Scope
This includes; Internal and External Credit Transfer

3.0References
SEKU ISO QMS Manual
SEKU Examination Rules and Regulations
SEKU Service Charter
SEKU Statutes

7.0 Definition of terms
For the purpose of this procedure, the definition in SEKU ISO QMS will apply.

8.0 Responsibilities
The DVC –ARSA shall ensure this procedure is implemented.

9.0 PROCEDURE DETAILS

9.1 Internal Credit Transfer

9.1.1 The Registrar (ASA) receives a written request by a student.

9.1.2 Examination Officer with guidance of Registrar (ASA) writes to the Dean of the School to provide the students marks.

9.1.3 Upon receiving the marks, the examination officer sends the marks to the Dean where the student has moved to requesting for recommendation on the credit transfer.

9.1.4 The Current Dean of School then writes to Registrar (ASA) giving the requested recommendation.

9.1.5 Based on the recommendation from the current School, the registrar writes to the Student informing him/her on the credits earned.

9.1.6 Registrar (ASA) writes to the Dean of School to incorporate the credits earned in the student's data base.

9.1.7

9.2 External Credit Transfer

9.2.1 The Registrar (ASA) receives a written request by a student.

9.2.2 The Registrar (ASA) writes to the University where the student is transferring from requesting for the student Academic records.

9.2.3 Upon receiving the student's grades and marks the registrar (ASA) forwards to the Dean of School for credit transfer recommendation.

9.2.4 The Dean of the School on behalf of Deans Committee makes recommendation on the credits to be given.

9.2.5 The registrar (ASA) writes to the student on the approved credits.

9.2.6 Registrar (ASA) writes to the Dean of the School to incorporate the bought credits in the student Database/records.

Appendix VI: Thesis marking Schedule

SEKU/ARSA/BPS/F-05

SOUTH EASTERN KENYA UNIVERSITY
BOARD OF POSTGRADUATE STUDIES

THESIS MARKING SCHEDULE

The marking schedule has been developed to provide guidelines for examiners about the features of thesis that are conventionally regarded as desirable. It also aims to increase consistency between examiners, enhance validity of the assessment process. The schedule is not intended to be totally prescriptive, particularly when the nature of a student's research, and the way in which it is reported, justifiably depart from the conventions that are reflected here.

STUDENT NAME **REGISTRATION NUMBER**

TITLE OF THESIS _____

_____

DEPARTMENT _____ **SCHOOL** _____

Item	DESCRIPTION	Maximum Mark	Marks Scored
Title and Scope	• The title clearly reflects the topic, style, and thrust of the research. • Scope of the topic is achievable.	**3.0**	
Abstract	• The abstract contains all of the key information. • The abstract is approximately 200 words long	**5.0**	
Introduction	• The purpose of the project is very clear. • Clear statement of problem • There is excellent justification of the chosen topic. • SMART objectives	**7.0**	
Literature Review	• There is an excellent coverage of relevant literature from a range of sources and journals. • There is a highly developed critique of existing literature and it is clearly linked back to the relevance of the chosen topic.	**10.0**	
Methods	• Method is appropriate. • All aspects of the method are described in detail. • There is appropriate and relevant choice of data.	**10.0**	
Data Analysis	• Appropriate and relevant choice of data analysis tools	**10.0**	

	• Clear analysis procedures accompanied by justification for choices		
Results	• Presentation of the data / results is exceptionally clear. • Analysis is appropriate, thorough, and possibly innovative. • Analysis contains no inaccuracies or inconsistencies.	**20.0**	
Discussion	• There is excellent interpretation of results in relation to the study's objectives. • There are very good references to theory and literature. • There is appropriate reflection about the study and an excellent discussion of the issues raised. • There is excellent application of results to professional and personal practice and the community / society etc. • Limitations of the study are very well addressed. • There is excellent discussion of possibilities regarding future research.	**10.0**	
Conclusions	• Clear, appropriate and relevant conclusion	**2.5**	
Recommendations	• Clear, appropriate and relevant recommendations	**2.5**	
Overall organization	• The thesis is an exceptional piece of writing that has coherence, originality, and creativity. • Formatting is consistent, error free, and impressive.	**5.0**	
References	• A recommended referencing system is used correctly and consistently throughout the dissertation. • All references cited in the text are included in the reference list, and vice versa.	**10**	
Skills in written English	• Language, grammar, and spelling are correct and appropriate throughout the thesis.	**5.0**	
• **TOTAL MARKS**		**100.0**	

Classification of thesis: ≥ 50% PASS

EXAMINERS NAME _____ **SIGNATURE**_____ **DATE**_____

APPROVED FOR ISSUE

DEPUTY VICE CHANCELLOR (ARSA) Prof. Z. Ng'ang'a

SIGNATURE _____

DATE: 17th March 2016

OFFICE OF THE DEPUTY VICE CHANCELLOR
ACADEMIC, RESEARCH & STUDENT AFFAIRS
SOUTH EASTERN KENYA UNIVERSITY
P. O. Box 170-90200
KITUI - KENYA

University Kara

University Lome

CURRICULA FOR MASTER

CONSERVATION AND PROCESSING OF AGRICULTURAL PRODUCTS
« Conservation et transformation des produits agricoles »

Domaine : Sciences agronomiques

Mention : Technologies agroalimentaires

Spécialités : Conservation et transformation des Produits Agricoles

Sommaire

1. Dénomination de la formation

- Grade : Master Professionnel
- Domaine : Sciences Agronomiques
- Mention : Technologies agroalimentaires
- Spécialité : Transformation et Conservation des Produits Agricoles
- Durée: 4 semestres

2. Contexte et justification de création de la formation

L'agriculture est une composante essentielle de l'économie en Afrique subsaharienne, jouant un rôle crucial dans le développement économique et la sécurité alimentaire. Elle représente une part importante du Produit Intérieur Brut (PIB) et mobilise une majorité de la population active dans des pays de la sous-région ouest-africaine (Banque Mondiale, 2022). Cependant, malgré des conditions climatiques favorables et un potentiel agricole élevé, ce secteur fait face à des défis structurels, notamment en ce qui concerne la conservation et la transformation des produits agricoles.

Dans de nombreux pays de la sous-région, les pertes post-récoltes sont estimées à environ 30% à 40%, dues à des méthodes de conservation inadaptées et des pratiques de transformation inefficaces (FAO, 2021). Cette situation engendre des pertes économiques considérables pour les producteurs et nuit à la sécurité alimentaire des populations locales. Le cas du Togo illustre bien cette problématique, où l'agriculture représente 41,5% du PIB et emploie 70% de la population active, mais souffre d'un déficit d'infrastructures et de savoir-faire pour optimiser la chaîne de valeur agricole (Ministère de l'Agriculture du Togo, 2020).

Face à la mondialisation et à l'accroissement de la demande pour des produits alimentaires de qualité, tant sur les marchés nationaux qu'internationaux, il devient impératif de moderniser les systèmes de production et de transformation. Les consommateurs, de plus en plus exigeants, recherchent des produits nutritifs, sûrs et conformes aux normes sanitaires strictes imposées par les accords commerciaux et les réglementations internationales (Organisation Mondiale du Commerce, 2021).

Dans ce contexte, le développement des compétences techniques et scientifiques dans le domaine de la transformation et de la conservation des produits agricoles devient une priorité. La sous-région ouest-africaine, à l'instar du Togo, souffre d'une formation insuffisante dans ces domaines, limitant ainsi l'essor de l'agro-industrie et la compétitivité des produits agricoles sur les marchés. Les pertes post-récoltes réduisent non seulement les revenus des agriculteurs mais constituent aussi un frein au développement durable (Affognon et al., 2015).

La création d'un **Master en Conservation et Transformation des Produits Agricoles** se justifie donc par la nécessité de combler ce déficit en compétences, de renforcer les capacités locales, et de soutenir la modernisation du secteur agroalimentaire dans la sous-région. Cette formation vise à doter les professionnels des outils et connaissances nécessaires pour optimiser les différentes étapes de la chaîne de valeur agricole, du stockage à la transformation, tout en intégrant des pratiques durables et

respectueuses de l'environnement. Elle s'aligne également sur les objectifs de développement durable des Nations Unies, notamment en ce qui concerne la réduction des pertes alimentaires et la promotion de l'agriculture durable (UNDP, 2022).

De plus, la Feuille de route gouvernementale2020-2025 du Togo met un accent particulier sur la modernisation du secteur agricole à travers l'amélioration des infrastructures et des techniques de production, de conservation et de transformation (République Togolaise, 2020).. Ces efforts sont soutenus par des organisations internationales telles que l'Organisation des Nations Unies pour l'alimentation et l'agriculture (FAO), la Banque Mondiale, et le Fonds International de Développement Agricole (IFAD), qui soulignent tous l'importance de renforcer les infrastructures et de promouvoir l'entrepreneuriat dans le secteur agroalimentaire (FAO, 2021 ; IFAD, 2022).

Ce programme de formation contribuera non seulement à l'amélioration des pratiques locales mais aussi à l'émergence d'une nouvelle génération de spécialistes capables de développer des projets innovants dans le domaine de l'agro-industrie. Il jouera un rôle clé dans la création d'emplois, l'augmentation des revenus des agriculteurs et l'amélioration de la compétitivité des produits sur les marchés locaux et internationaux. Par conséquent, la mise en œuvre de ce Master répond à un besoin urgent et crucial pour le développement socio-économique durable de la sous-région.

3. Mission de la formation

La mission de cette formation est de de mettre à la disposition du Togo et de la sous-région, des cadres supérieurs en conservation et transformation des produits agricoles. Les apprenants seront formés à la mise en place de techniques innovantes et durables qui permettront de prolonger la durée de vie des produits agricoles tout en augmentant leur valeur ajoutée grâce à la transformation.

4. Finalités de la formation

Les finalités de la formation sont de former des cadres capables de :

- Appliquer des techniques modernes de conservation adaptées aux spécificités locales.
- Maîtriser les procédés de transformation des produits agricoles pour accroître leur valeur ajoutée.
- Mettre en place des solutions pratiques pour réduire les pertes post-récoltes.
- Faciliter l'installation et la promotion d'unités de transformation résilientes aux effets du changement climatique, tout en respectant les normes de qualité et de sécurité alimentaires.
- Contribuer à la sécurité alimentaire et à la durabilité des systèmes agricoles.
- Conseiller les producteurs et entreprises agroalimentaires sur les bonnes pratiques de conservation et de transformation.

5. Profil d'entrée

La formation est ouverte :

- Aux titulaires d'une Licence LMD en Sciences Agronomiques, en Technologie Agroalimentaire ou en Biologie, ou tout.
- Aux ingénieurs agronomes et ingénieurs des travaux agricoles.
- À tout candidat titulaire d'un diplôme équivalent dans les domaines cités.

L'admission est soumise à une étude de dossier suivie d'une interview.

6. Profil de sortie

Les diplômés auront un profil de cadre supérieur capable de travailler dans les domaines de la conservation et de la transformation des produits agricoles. Ils seront aptes à concevoir et mettre en œuvre des projets innovants dans les secteurs agroalimentaire et agro-industriel.

7. Bassin d'emploi

Les diplômés de cette formation pourront exercer dans :

- Les industries agroalimentaires
- Les organisations de développement agricole (ONG, coopératives)
- Les entreprises spécialisées dans la gestion post-récolte
- Les centres de recherche agronomique
- Les institutions publiques et privées d'appui aux agriculteurs

Ils pourront aussi créer et gérer leurs propres entreprises de transformation ou de stockage des produits agricoles.

8. Curricula et déroulement des formations

La formation en Master Professionnel en Conservation et Transformation des Produits Agricoles se déroulera sur quatre (4) semestres, soit 2 ans. Les tableaux suivants présentent les Unités d'Enseignement et les nombres de crédit par semestre.

Semestre 1				
Intitulé de l'UE	**ECU**	**Code UE**	**Crédit**	**Vol. Horaire**
Placement			15	
Food value Chain Management Gestion de chaines de valeur agricole			3	
Principles of Agripreneurship and product development Principes de l'Entrepreneuriat Agricole et du Développement de Produits			6	
Food processing technology			6	
Techniques de transformation des aliments				
Total			**30**	

Semester 2				
Intitulé de l'UE	**ECU**	**Code UE**	**Crédit**	**Vol. Horaire**
Crop, livestock and fish value chain management			6	
Digital technology for Agri-Food system **Technologie Digitale en Agroalimentaire**			6	
Sustainability for Commodity and food value chain **Gestion de la durabilité des Chaînes de valeur**			6	
Research methods in the Food and AgriFood sectors **Méthodologie de recherche en agroalimentaire**	Experimental design Plan expérimental		2	
	Applied biostatistics Biostatistique appliqué		3	
Scientific writing **Rédaction scientifique**			3	
Supply chains and transport networks of agricultural products **Chaînes d'approvisionnement et transport des Produits Agricoles**			4	
Total			**30**	**300**

Semester 3				
Intitulé de l'UE	**ECU**	**Code UE**	**Crédit**	**Vol. Horaire**
Processing machinery of agricultural products **Machines et équipements de transformation des produits agricoles**	Processing machinery for fruits, vegetables, roots and tubers Machines et équipement de transformation de fruits, légumes, racines et tubercules		3	
	Processing machinery for grains and cereals Machines et équipement de transformation de graines, céréales et oléagineux		2	
Preservation techniques of agricultural products **Procédés de conservation des produits agricoles**	Preservation techniques for fruits, vegetables, roots and tubers Procédés de conservation des fruits, légumes, racines et tubercules		3	
	Preservation techniques for grains and cereals Procédés de conservation des grains, des céréales et des oléagineux		2	
Post-harvest Physiology of agricultural products **Physiologie post-récolte des produits agricoles**	Supply chains and transport networks of agricultural products		2	
	Post-harvest Physiology		3	
Post-harvest storage pests and diseases and their control **Ravageurs et maladies post-recoltes et leur contrôle**	Post-harvest storage pests and their control **Ravageurs post-recoltes et leur contrôle**		3	
	Post-harvest storage pests and their control **Maladies post-récolte et leur contrôle**		2	
Principes fondamentaux de l'électricité industrielle			2	
Séminaire thématique			5	
Project Planning and Management **Planification et gestion de projets**			3	
Total			**30**	**300**

Semester 4				
Intitulé de l'UE	**ECU**	**Code UE**	**Crédit**	**Vol. Horaire**
THESIS **MEMOIRE**			30	
Total			**30**	**300**

PS: The module « Seminar » will address several aspects including: intellectual property, energy & industrial cooling, Social protection and risk management, fiscal policy, fire risk management, waste management