

BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT

1.0 INTRODUCTION

Agribusiness continues to be one of the key drivers of economic development and growth in the developing countries. Effective organization and management of agribusinesses is, therefore, important in realizing rapid economic progress. The development of this curriculum has benefited from broader agricultural sector stakeholders including managers of agribusiness firms and graduates with similar backgrounds. The programme is structured to prepare students to cope with some of the recent developments and trends in both the national and global economies. Furthermore, the program reflects the current thinking and direction taken by similar programs by contemporary universities in the region and world wide. The purpose of this curriculum is to produce graduate students who will contribute to the national economic development by applying the skills learned during the program to real life agribusiness development and management situations.

2.0 OBJECTIVES

The overall objective of the programme is to produce skilled, motivated and internationally competitive graduates to work in both private and public agribusiness entities. The specific objectives of the programme are:

- a) To develop competence in students in allocative efficiency in resource use and management in the agribusiness industry.
- b) To produce students with relevant knowledge and skills in agribusiness development and management.
- c) To provide the students with positive attitude and motivation in the agribusiness sector.

3.0 ADMISSION REQUIREMENTS

3.1. Kenya Certificate of Secondary Education Candidates

- a) Candidates must satisfy the minimum university requirements of mean grade of C+.

- b) In addition to 3.1(a) above, candidates should offer passes at C+ or above in Biology, Physics, Chemistry and Mathematics; and satisfy the Joint Admission Board's subject cluster requirements.

3.2 Other Candidates:

Admission to the degree course may also be granted to the following candidates:

- a) Holders of KACE with two principal passes in science subjects and at least a credit in mathematics at Ordinary level.
- b) Holders of diploma in agricultural or business related subjects from a recognized college.
- c) Holders of a related degree from a recognized University.
- d) Holders of a relevant Higher National Diploma from a recognized institution.

4.0 COURSE STRUCTURE AND DURATION

- 4.1 The degree shall normally take four academic years of 8 semesters.
- 4.2 Courses shall be offered in units. A course unit is that part of a subject described by a coherent syllabus and taught normally over a period of one semester. Its designated as a total of forty two (42) hours of study in a semester. For this purpose one 1-hour lecture is equivalent to one 2-hour tutorial or one 3- hour practical or any combination as may be approved by the Board of the School of Agriculture Food Security and Biodiversity.
- 4.3 Part-time students shall be allowed to take not less than 50% of the courses prescribed for the year.
- 4.4 All courses will be taught for a total of 42 contact hours, including examinations except industrial attachment which will take 294 hours of practical work in a relevant industry.
- 4.5. Students shall be required to undergo an Agribusiness Industrial Attachment of three (3) months at the end of 2nd semester of the third year of study.

5.0 EXEMPTION FROM COURSES

Students may be exempted from some courses by Senate on recommendation of the School Board.

6.0 EXAMINATIONS REGULATIONS

University Senate Examinations rules and regulations shall apply.

7.0 COURSE DISTRIBUTION

YEAR 1: SEMESTER 1

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
AAE 3111	Fundamentals of Development in Agribusiness	42	0	42	1C
AAE 3112	Introduction to Agribusiness Management	42	0	42	1C
AAE 3113	Farming Systems and Rural Livelihoods	42	0	42	1C
SMA3 111	Mathematics	42	0	42	1R
AEN3 115	Communication Skills	42	0	42	1R
SBI 3114	HIV and AIDS	42	0	42	1R
APT 3114	Introduction to Agriculture	42	0	42	1C
SCS 3111	Computer Organization and Application	28	14	42	1R
	Total	322	14	336	8

YEAR 1: SEMESTER 2

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
BEN 3121	Principles of Microeconomics	42	0	42	1C
AEN 3120	Social Ethics and Integrity	42	0	42	1R
AAE 3122	Sociology and Development	42	0	42	1C
APT 3125	Principles of Crop Production	28	14	42	1C
SMA 3122	Mathematics II	42	0	42	1R
SLB 3121	Development Studies	42	0	42	1R
AFB 3122	Introduction to Food Industry	42	0	42	1R
SCS 3123	Fundamentals of Programming	42	0	42	1R
	Total	322	14	336	8

YEAR 2: SEMESTER 1

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
AAE 3211	Extension Methods and Community Outreach	42	0	42	1R
AAE 3212	Biodiversity and Agricultural Biotechnology	28	14	42	1R
BBM3212	Business Accounting	28	14	42	1C
BEN3213	Principles of Macroeconomics	28	14	42	1R
AAE 3213	Agribusiness Human Resource Management	42	0	42	1C
AAE 3214	Principles of Agricultural Marketing	28	14	42	1C
APT 3216	Principles of Plant Pathology	28	14	42	1R
	Total	266	70	336	7

YEAR 2: SEMESTER 2

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
BBM3226	Operations Research	42	0	42	1R
AAS 3221	Principles of Animal Production	28	14	42	1R
BBM3227	Organizational Theory	42	0	42	1C
AAE 3221	Agribusiness Industrial Organization	28	14	42	1R
AAS 3222	Livestock Production Systems	28	14	42	1R
AAE 3223	Agricultural Finance	42	0	42	1C
BEN 3225	Production Economics	42	0	42	1C
	Total	252	42	294	7

YEAR 3: SEMESTER 1

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
BBM3317	Financial Management	42	0	42	1C
AAE 3311	Quantitative Methods in Agricultural Economics I	28	14	42	1C
BEN 3312	Managerial Economics	42	0	42	1C
APT 3313	Crop Protection	28	14	42	1R
AAS 3316	Animal Health Management	28	14	42	1R
AAE 3312	Analysis and Planning of Agricultural Projects	28	14	42	1C
BLB 3318	Business Law	42	0	42	1R
BEP 3315	Entrepreneurship	42	0	42	1R
	Total	294	56	350	8

YEAR 3: SEMESTER 2

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
AAE 3321	Crop and Livestock Production Economics	42	0	42	1R
AAE 3322	Agribusiness Management Plans and Strategies	42	0	42	1C
AAE 3323	Agribusiness Rural and Micro-finance	42	0	42	1R
AAE 3324	Agribusiness Price Analysis	42	0	42	1C
AAE 3325	Farming as a Business	42	0	42	1C
AAS 3321	Ruminant and Non-Ruminant Production	28	14	42	1R
APT 3321	Perennial Crops	28	14	42	1R
		266	28	294	7

YEAR 3: SEMESTER 3**AAE 321: Industrial Attachment 480 Hours****YEAR 4: SEMESTER 1**

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
AAE 3411	Agricultural Marketing Strategies	42	0	42	1C
BBM3416	Management Accounting	42	0	42	1C
AAE 3412	Agribusiness Research Methods	28	14	42	1C
APT 3413	Horticultural Production	28	14	42	1C
AAE 3424	Project I & II	0	42	42	1C
AEB 3417	Environmental and Socio-Economic Impact Assessment	42	0	42	1R
BEN 3415	Intermediate Microeconomic	42	0	42	1R
	Total	252	42	294	7

YEAR 4: SEMESTER 2

Course Code	Course Title	Contact Hours			Weight (Unit)
		Lecture	Practical	Total	
AAE 3421	Agricultural Law and Institutional Analysis	28	0	42	1C
AAE 3422	Agricultural Policy Analysis	42	0	42	1C
AAE 3423	International Agricultural Trade	42	0	42	1C
AAE 3424	Project I &II	28	14	42	1C
AAE 3425	Environmental and Natural Resource Economics	0	42	42	1R
BEN 3426	Intermediate Macroeconomics	42	0	42	1R
AAE 3427	Farm Management	42	0	42	1C
		210	14	294	7

C: Core course, which is central to the discipline of study.

R: required course, which is supportive or beneficial to the programme.

9. COURSE DESCRIPTIONS

YEAR 1: SEMESTER I

AAE 111: Fundamentals of Development in Agribusiness 42 Hours

An overview of the theories of agribusiness development; The relationship between socio-economic development and Agribusiness; Modernization and economic growth in agribusiness; Innovation systems and novelty in agribusiness development; The importance of economic and social institutions in agribusiness development; Ethics and values in agribusiness development; The role of government in agribusiness development, power, authority and forms of government; Public procurement: Trends in policy development, preferences and reservations, best practices, guidelines; government and its organ: Legislature, executive and judiciary; Political parties; Participation of Small and Micro-Enterprises in public procurement and overall economic developments.

AAE 112: Introduction to Agribusiness Management**42 Hours**

Concepts of agribusiness and management; Theories of management, functions of management;, structure & scope of Kenya's agribusiness industry; Importance of Agribusiness to Kenya's economic development; Challenges to agribusiness growth in Kenya; Production and operations systems in Agribusiness management; Marketing in the agribusiness sector, Managing human resource in Agribusiness; Financial management in Agribusiness.

AEN 115: Communication Skills**42 Hours**

Study skills; Planning study time, making references, filing notes; Preparing for examinations. Library Skills: Organization; Classification, shelving; using reference books, listening in lectures, speeches and instructions, understanding lectures, note taking, speaking skills, asking and answering questions in lectures and seminars, making and defending arguments, agreeing and disagreeing, explaining points clearly, academic reading skills, skimming and scanning, understanding footnotes and bibliographical references.

AAE 113: Farming Systems and Rural Livelihoods**42 Hours**

Processes of environmental, economic and social change from the global, regional and local perspectives; Emergence of new forms of production, exchange, consumption, and governance; Impacts of global and regional production and consumption trends and changes on food and agriculture; Structure and dynamics of agri-food systems; Trade liberalization; Deregulation of foreign investment; Government divesture in the agricultural sector; Privatization and globalization of agricultural commodity chains; Ascendance of regional and global retailers in poor economies; Governance restrictions and operation of agri-business supplies; Agricultural commodity value chains; Consolidation of food processing and manufacturing; Farming system determinants; Pro-poor farming systems approaches and methodologies.

SMA 111: Mathematics I**42 Hours**

Elementary set theory; Mappings and functions: Definitions, domains, co-domains, range and inverses and composition of functions; Trigonometry; Functions: Their graphs, inverses, degree and radian measure, sine and cosine formulae, trigonometric identities and equations. Algebra: Quadratic equations. Surds, logarithms and indices. Series: Arithmetic and geometric progressions, Permutation and combinations. Binomial theorem and applications such as approximations, simple and compound interest. Remainder theorem applications to solutions of factorizable polynomials. Statistics: Collection and representation of data. Measures of central tendencies and variability. Graphical and axiomatic approaches to probabilities. Tree diagrams. Probability: Definition, axioms, tree diagram.

SBI 114: HIV and AIDS**42 Hours**

Introduction; Historical background and magnitude of HIV and AIDS, general organization of the human body, reproduction, immune system (human physiology) and other factors; Sex and sexuality; The biology of the human immunodeficiency virus and viral transmission; Stages of infection and the development of HIV and AIDS; Opportunistic infections; HIV and AIDS prevention and infection control; Peer education for HIV; Treatment options and vaccine development; blood transfusion and HIV and AIDS; Management of HIV and related infections; Legal and Ethical Issues in HIV AND AIDS; Factors that influence the spread of HIV and AIDS in Africa; Case studies in selected countries in Africa; HIV and AIDS as a national disaster impacts; Myths and emerging issues on HIV and AIDS.

APT 114: Introduction to Agriculture**42 Hours**

Agricultural industry; Agriculture and its contribution to development; Opportunities for agro-industries; Employment opportunities in agriculture; Land resource: Climate and agriculture, soils and agriculture; Cropping systems; Biotechnology in agriculture: Tissue culture and genetic engineering; Harvesting and post-harvesting handling; Agricultural marketing; Classification of animal genetic resources (AnGR); Livestock production systems; Animal breeding, nutrition and management; Non-conventional species; Fish farming and production; Farm power and machinery; Processing and storage of agricultural products; Introduction to agricultural product value chains.

SCS 111: Computer Organization and Applications**42 Hours**

Organization: Introduction to the computer and the notion of a programmable machine. The basic organization based on the von Neumann model. Functional components (CPU, memory, I/O) and their logical organization. Number systems and internal data representation. Concept software and types of software. Components of contemporary personal computer systems from end-user perspective; Application: Classical and contemporary applications of computers. Proficiency in basic computer usage and productivity/office automation applications including word-processing, spreadsheets, e-mail, web, etc. Basic first year security and maintenance issues. Ethical and societal issues.

YEAR 1: SEMESTER 2**BEN 121: Principles of Microeconomics****42 Hours**

Basic concepts of economics applied to agriculture with special reference to Kenya; Economic systems; Scarcity, choice and opportunity costs; The price theory; Demand and supply; Elements of utility; Demand and basic concepts of elasticity; Economics of production including production functions and costs of production; Market structure; Theory of distribution and factor markets; The price system and economic role of government.

AEN 120: Social Ethics and Integrity**42 Hours**

Definitions and concepts; Categories of ethics; national cohesion; integrity; Unity; Structural injustices; ethnicity: Positive ethnicity, negative ethnicity; Peace: Peace making, peace building, peace transformation; Stake holders in national cohesion.

AAE 122: Sociology and Development**42 Hours**

Historical background of sociology; Social groups and culture; Origins, growth and current state of rural sociology; Importance of rural sociology on extension and community/rural development; The community and its theoretical conceptions; Planned and unplanned development; Importance of change agencies and agents; Rural organizations and leaderships; Indicators and concepts of development; Drivers of growth and development; District focus for

rapid rural development; Rural poverty and nutritional problems; Rural unemployment; Rural industrialization and employment creation.

APT 125: Principles of Crop Production

42 Hours

Concept of crop production, energy/biomes transfer systems; Environmental factors determining crop performance; Cultural practices: seedbed preparation, cultivation, plant seed and seed rates, plant population; Crop protection; Maintenance of soil fertility: organic and inorganic fertilizers; soil and water conservation; Cropping systems including crop rotation; Intercropping and agro-forestry.

SMA 122: Mathematics II

42 Hours

Coordinate geometry and equations of straight lines. Matrices: Definitions, matrix algebra, determinants, transpose adjoints, inverses and solutions of systems of linear equations using matrix method. Limit continuity; Differentiation and integration of algebraic, trigonometric, exponential functions; Applications of differentiation and integration to rates of change, maxima, minima. Area under curve. First order D.E and their application.

SLB 121: Development Studies

42 Hours

Development Studies as an autonomous discipline; The concept of development; An overview of the theories and paradigms of development; The relationship between economic growth and development; Science and technology in development; Developed and developing countries; Issues in development: Social, economic and political; Actors in development: The state, national and international NGOs, bilateral and multilateral institutions, multinational corporations (MNCs), and social movements.

AFB 121: Introduction to Food Industry**42 Hours**

Description of the food industries in Kenya including cereals, proteins, fruits and vegetables; The food industry in Kenya and their role in economic development; Processed food industry and food consumption patterns in the world; The nature and opportunity costs of food crops and industrial crops in food security.

SCS 123: Fundamentals of Programming**42 Hours**

Introduction to computer programming: High-level and Low-level Languages, Generations of Programming Languages; Program writing tools: Editors; Language translators: Assemblers, Compilers, Interpreters (Only concept and differences), Source code, Object code, Executable file and extensions of the different files, Running of a Program; Structured program design: Top-down design, Flow charts: Definitions and Symbols used to draw flowcharts; Coding, Testing and evaluation of programs. Procedural Programming: Structure of a procedural Program; Data types and expressions; Control structures; Arrays; Records /structures; Functions; Procedures; Advanced features: Files; Library procedures; Graphical User Interfaces.

YEAR 2: SEMESTER 1**AAE 211: Extension Methods and Community Outreach****42 Hours**

Extension concepts; Agricultural extension philosophy, scope and responsibilities; Comparative study of agricultural extension systems, approaches and methods; Research extension linkage; communication theories and systems; Factors influencing effective communication in communities; Role of women in agricultural development; Women and Agricultural extension; Role of rural youth in agricultural extension; Planning and implementation of women and youth programmes in Extension; Group projects and clubs; Communication process and communication strategies for agricultural and rural communities; Development and selection of ICT-based agricultural communication tools – ICT-Villages/Centers, Mobile-Telephony, Agricultural information centers, video production, graphic design, multimedia development; Monitoring extension impacts in communities.

AAE 212: Biodiversity and Agricultural Biotechnology**42 Hours**

Ecosystem structure and functions; Definitions of biodiversity and biotechnology; Importance of biodiversity in Africa; Biodiversity and bio-prospecting; Conservation of biodiversity; Agro-biodiversity; Importance of biotechnology; Industrial and environmental biotechnology; Agricultural and food biotechnology; Health-related biotechnology; Food and nutrition related biotechnology; Emerging trends in biotechnology; Case studies in North America; Implications of agricultural bio technology for developing countries; Biosafety and Intellectual Property Rights (IPRs); Product development, quality control and legislation.

BBM 212: Business Accounting

42 Hours

Basic accounting and book-keeping; The need for book-keeping; The accounting equation and the balance sheet; The double-entry systems for assets, liabilities, owner's equity, expenses and revenue; Balancing off-accounts; The trial balance; Trading, profit and loss accounts; The balance sheet; The cash book; The (major) journals; Depreciation of fixed assets; The provisions (allowances); Bank reconciliation; Accounts of sole traders, partnerships and limited companies; Bad debts and provision of bad debts; Accruals, prepayments and statement; Types of record books; Accounting conventions; Accounting for inventories, receivables, cash and short-term investments; Plant assets, their depreciation and disposal; Accounting for intangible assets, long-term investments, current liabilities, long-term debts, stockholders, equity; warrants, convertible securities and employee capital accumulation fund.

BEN 213: Principles of Macroeconomics

42 Hours

Elements of economics applied to the economy as a whole with emphasis on monetary and fiscal policy problems: National income accounting, determinants of national income, fiscal policies, introduction to international economics and economic growth.

AAE 213: Agribusiness Human Resource Management

42 Hours

Evolution of human resource management; Manpower planning in agribusiness: forecasting, need for HR planning in agribusiness, job analysis purpose and use; Recruitment selections and induction; Employee training and development in agribusiness: importance of training, types of training programs, methods of staff development; Employee performance appraisal (PA);

Purpose and benefits of PA, participants in PA, methods of PA; Methods of calculating salaries and wages in agribusiness; Motivation theories; Legal and organization issues: Contractual types, domestic and international labor laws; Gender/youth/child labor issues: Equal employment opportunities, domestic and international labor unions; Human resource accounting and audit: Objectives of HR accounting, areas of HR audit, benefits of HR audit; Separation: ways of separation.

AAE 214: Principles of Agricultural Marketing

42 Hours

Definition of Agricultural Marketing; Marketing functions: Assembly, grading/sorting, transportation, risk bearing, financing; Marketing systems/channels; Structure, conduct and performance of agricultural markets; Supply/value chain analysis; Nature of rural agricultural markets: Information asymmetry, infrastructure; Globalization and marketing of high value commodities; Crop and livestock products; Collective action in agricultural marketing; Agricultural marketing boards/parastatals: Role, effectiveness, efficiency; Risk management in agricultural marketing; Futures markets; Role of agricultural marketing in economic development.

APT 216: Principles of Plant Pathology

42 Hours

Importance of Plant pathology; Concepts and definitions of, nature, cause and control of plant diseases; Agents of infectious and non-infectious diseases; Inoculums and Inoculums potential; Vectors and causative agents of infectious diseases with special reference to fungi, bacteria and viruses; Non-infectious diseases; Stages in disease development, inoculation, infectious, pathogenesis and symptoms; Disease severity and assessment; Epidemiology; Effects of environmental factors on plant diseases, toxins and plant disease; Disease resistance in plants' genetics of host plant interactions physiology of diseased plants; Control of plant diseases and chemicals used.

YEAR 2: SEMESTER 2

BBM 226: Operations Research

42 Hours

Definition of Operations Research (OR) and the nature of OR problems; Modeling OR problems, linear optimization models, solutions of OR problems; Introduction to LP: Basic methods of LP, graphical and algebraic solutions to LP problems, activity analysis, the simplex method, primal and dual problems, sensitivity analysis; Application of LP: Marketing applications, transportation and variants of transportation methods, ingredient mix application; Decision making under risk and uncertainty; An introduction to quadratic programming; Applications of OR – game theory, queuing theory, simulation, inventory theory, forecasting.

AAS 221: Principles of Animal Production

42 Hours

Animal industries in Kenya; animal production and its contribution to the economy; Animal production systems as affected by ecological factors; Ecological definitions and concepts in relation to animal production systems and their management; Structure, function and ecology of animal production systems; Basic principles of the management of agricultural ecosystems; The Kenya environment; Major characteristics of the ecological zones of Kenya and effects on animal production; Animal environment and livestock structures; Aspects of livestock design; Economics of controlled environment; Animal growth and development of various organs; Tissues and fibers; Variation of growth and development of the body.

BBM 227: Organizational Theory

42 Hours

Definition of organization and institutions; Individual behavior in organizations: Opportunism, personality tests, reinforcement and rewards, generational values; Group behavior in organizations: Organization change strategies, work teams, communication, conflict management; Organizational behavior dynamics: Models of organizational behavior, organizational culture, organizational governance, organizational hierarchy and decision making.

AAE 221: Agribusiness Industrial Organization**42 Hours**

Introduction and review of theory of the agribusiness firm; monopoly; Product selection, quality and advertising in agribusiness; Price discrimination; Agribusiness vertical integration; Short run price competition; Agribusiness dynamic price competition and tacit collusion; Agribusiness product differentiation; Price and non-price competition in agribusiness: entry, accommodation and exit; Agribusiness information and strategic behavior: reputation, limit pricing and predation; None cooperative game theory.

AAS 222: Livestock Production Systems**42 Hours**

Role of livestock production in the Kenyan economy; Poultry industry and production systems; Dairy industry and production systems; Beef industry and production systems; Other production systems: Camel, goat, sheep, rabbit, fish and bee- keeping; Handling, preservation and processing of animal products: Wool, hides, skins, meat, milk, and eggs.

AAE 223: Agricultural Finance**42 Hours**

Financial services: Capital, savings and credit in agriculture; The role of credit (utilization of funds within the farm business; Acquisition of funds through borrowing); Classification of credit; Economic feasibility tests of credit proposal (the Rs – returns, repayment, risk bearing ability, in credit analysis); The Cs – capacity, collateral, character, condition and common sense; The Ps – purpose, person, projections, payment, protection security); Interest rates and cost of borrowing/lending; Financial leverage, forward planning; Challenges and approaches to small farm finance; Microfinance (issues to consider: Designing and monitoring financial products and services; Measuring performance and managing viability

BEN 225: Production Economics**42 Hours**

Meaning; Nature and Scope; Objectives; Framework of Analysis; Production functions and profit maximization: Concept of a production function, factor-product relationships; Three stages of production functions; The law of diminishing marginal returns; Optimum level of input use; Production function and technological change; Costs and returns; Analysis and optimum production size; Cost concept; Categories of costs; Cost function; Optimum production size; Principle of profit maximization; Principle of minimum loss; Factor and product price changes

and production decisions; Factor-factor Relationships: Determination of optimum combination of resources; Economies of size and their implications for firms; Product-product relationships: Various relationships among products; Determination of optimum combination of products; Decision making under risk and uncertainty: Decision making with less than perfect information; Reducing risk and uncertainty; The role of government in reducing risk and uncertainty.

YEAR 3: SEMESTER 1

BBM 317: Financial Management

42 Hours

Objectives of financial management; Financial statements: cash flow analysis, financial leverage and other elements in the application of the theory of capital investment; investment appraisal, costs of capital for making management decisions; Dividend policy; The resources of business finance: equity and loan capital – shares, loans debentures, hire purchase, trade, credit; Finance from retained earnings; Stock exchange: terminology, functions, new issues, offers for sale, placing, rights bonus issues; Quotations, dealings and documents used; Calculation of yields and P/E ratios; Financial institutions: The central bank-control of credit, capital issues, exchange control and related matters, commercial banks, hire purchase finance companies; other financial institutions: Insurance.

AAE 311: Quantitative Methods in Agricultural Economics I

42 Hours

Overview; Tool for decision making; Basic techniques; Correlation theory, probability theory, random variable, standard normal distribution; Econometrics–rationale, goals, general methodology; Regression theory: Least squares technique OLS, stochastic term, basic assumptions, measures of goodness of fit, sampling distribution, central limit theorem, hypothesis testing, desirable properties of estimators and dummy variables.

BEN 312: Managerial Economics**42 Hours**

Meaning and scope of managerial economics; Business firm and business decision making; Demand analysis and forecasting; Cost-profit-volume analysis; Pricing; Capital budgeting and management; Introduction to decision theory; Introduction to game theory; Business decisions and government.

APT 313: Crop Protection**42 Hours**

Introduction to crop protection; Production and post harvest losses; Major crop pests: Flies, mites, nematodes, larvae, insects; Diseases of major crops: bacterial, fungal, viral; Epidemiology of insect pests and diseases; Vectors of major crop pests and diseases; Principles and methods of disease and pest control in crops: Chemical, biological, cultural; Identification and disposal of weeds; Chemical weed control: Herbicide selectivity and control toxicology and safe use; Pest and disease control in export crops: integrated pest management, maximum pesticide residue limits; New methods of pest control: Genetic engineering; Trans boundary disease and pest transmission; Role of KEPHIS; Legislation; Information; International conventions. Phytosanitary regulations: Guidelines for pest risk analysis; Guidelines for surveillance; Plant quarantine as related to export trade; Export certification process as practiced in Kenya.

AAS 316: Animal Health**42 Hours**

An overview of animal health and diseases; Economic importance of animal diseases; Important viral, bacterial, parasitic, nutritional and metabolic diseases; Disease prevention and control including biosecurity; Important notifiable diseases; Monitoring health and production in livestock; Animal health delivery services and institutions (regulation, policy and legislation); Health certification and trade; Emerging issues in animal health.

AAE 312: Analysis and Planning of Agricultural Projects**42 Hours**

Principles of project analysis and investment decisions; Project cycle management; Project planning under risk and uncertainty; Practical considerations in project planning and investment in Kenya; Capital investment and replacement decisions; Financial planning; Labor and manpower planning; Time as a resource in project planning; Case studies; The application

of project planning techniques: Log frame, Gantt chart and program evaluation and review techniques, project appraisal (measuring project costs and benefits), monitoring, evaluation and impact assessment.

BLB 318: Business Law

42 Hours

Basic features and modes of operation of business organization; Agency and vicarious liability; Formation, organization and management of partnerships and limited companies; Law of contract: formation, consideration and terms; Unenforceable contracts and vitiating factors, illegality, capacity, privity, discharge, remedies of breach; Quasi contracts; Sale of goods and consumer credit.

BEP 315: Entrepreneurship

42 Hours

Definition of Small and Medium Enterprise (SME); Theory and philosophy of entrepreneurship; Production efficiency, factor resource intensity, large vs. small enterprises, and justification for small enterprises; Understanding entrepreneurship: Starting a SME, creating and managing the venture; Sources of capital in venture creation; Consumer-entrepreneur relationship: role of product quality, innovation and skill in product quality; Marketing of SME product; Competitiveness; Scaling up; institutional arrangements; standards and quality; Barriers to SME development; role of SME in economic development; Case studies of successful SME: Indicators, vertical integration.

YEAR: SEMESTER 2

AAE 322: Crop and Livestock Production Economics

42 Hours

Farm Planning techniques; Farm input/output factors and means of production; The production function; The Law of diminishing marginal returns; Optimal levels of farm input allocation; Marginal cost; Marginal revenue; Input substitution; Returns to: Labour, management, capital and equity; Economies of scale; Cost analysis.

AAE 323: Agribusiness Management Plans and strategies 42 Hours

Agribusiness marketing plans; Commodity risks, strategies and management; Sales plan strategies and tactics; Agribusiness plan and risk development; Preparation for sustainable agribusiness risk management; Building an Agribusiness or small business plan: Tips, marketing and pricing strategy.

AAE 324: Agribusiness Rural and Micro-finance 42 Hours

Agribusiness as the engine for rural development; The role of Rural Micro-finance, objectives, local resource mobilization; The village banking; Social capital; Community Based Organizations; Capital acquisition and the use of credit; Types and sources of agricultural credit, credit delinquency.

AAE 325: Agricultural Price Analysis 42 Hours

Agricultural commodity price trends; Parity pricing; Predatory pricing; Competitive pricing; Cost analysis; Purchase/Sales price analysis; Commodity futures market; Hedging; Agricultural price forecast and outlook analysis; Globalization of agricultural production and trade.

AAE 326: Farming as a Business 42 Hours

Starting a successful farm business; commercialization of agriculture for sustainable rural development; Procedures for determining the most profitable farm business organization; The Need for planning; whole farm planning; Integral functions of management, planning, organization, control and directing; Investment analysis; Present and Future value of money; Payback period; Break-Even analysis.

AAS 321: Ruminants and Non-Ruminants 42 Hours

Differences between Ruminants and Non-Ruminants; The digestive tracts; Nutrients and their functions in Ruminants and Non-Ruminants; Rumen physiology and rumination.

APT 321: Perennial Crops**42 Hours**

Life cycle; Structure; Growth; Benefits in agriculture; Fruits, grain, grass and forages; Sustainable perennial crops; Integrating livestock with perennial crops; Perennial crops for energy and conservation; Breeding perennial crops; Perennial crops as growth regulators.

YEAR3: SEMESTER 3**AAE 321: Agribusiness Industrial Attachment****3 Months**

Agribusiness Industrial Attachment will be undertaken at the end of the Second Semester of the Third Year for eight (8) weeks. Students will be examined in three stages as follows: Field supervision by academic staff of work undertaken by the student while on the industrial attachment; oral presentation by the student upon return to the college on completion of the attachment (25%); and a written Report on the operation of the firm following the standard university report writing format (50%). The report should cover a theoretical background and identify a problem, causes, effects, and possible solutions and opportunities created on implantation of the intervention(s).

YEAR 4: SEMESTER 1**AAE 411: Agricultural Marketing Strategies****42 Hours**

Marketing research; Strengths, weaknesses, constraints cum problem tree analysis; Advertising and sales management of agricultural goods and services; Business information and forecasting methods, promotion as a system, the sales force; Distribution policy as well as physical distribution of agricultural commodities; Short, medium and long term marketing strategies of agricultural goods and services; The market plan: activities, costs, duration; Marketing and food safety standards – domestic and international rules and regulations

BBM 416: Management Accounting**42 Hours**

The purpose of management accounting; Cost terms and purposes; Cost-volume profit relationships; Budgets; Standard costs; Product costing: Job, process and batch costing; Cost allocation and accumulation; Relevant costs for decision making; Marginal costing; Absorption costing; Variance analysis; Stock control; Budgets; Operations management.

AAE 412: Agribusiness Research Methods**42 Hours**

Role of research; Use of models; Data sources and types; Qualitative and quantitative data capture and analysis; Questionnaire, mail, observation; Outline of a research proposal; Design of Experiments: Preliminaries; Principles of experimental design; Random and mixed effect models; Completely randomized design; Randomized block design; Transformations; Analysis of time series: Editing of time series data; Components of time series; Measurements of trends and seasonal variations; Interpolation and extrapolation: Graphic method, algebraic methods; Binomial expansion; Newton's and Lagrange's methods.

APT 413: Horticultural Production**42 Hours**

Economic importance of horticultural production; Environmental factors affecting crop production and distribution; Physiological and genetic control of growth and development of vegetable plants and their products; Effects of nutrition, irrigation and other variables on crop performance and produce quality and presentation and of vegetables; Tropical and sub-tropical fruit production; Ornamental and landscape horticulture; Floriculture; Post-harvest handling of horticultural produce; Protection and breeding of horticultural crops; Horticultural crop export policy; Marketing/production interfaces; Farm input application, management and pricing; Regulatory issues and intellectual property rights in horticultural crop production.

AAE 417: Environmental and Social-Economic Impact Assessment 42 Hours

Overview of environmental impact assessment; Environmental compartments and dynamics; Methodologies of assessing socio-economic impacts and environmental standards; Resource interactions; The assessment process; The physical environment: Aquatic terrestrial and wetland resources; Special issues of physical environment: Modeling techniques, hazard analysis; The social environment: Overview of components and dynamics, personal and interpersonal impacts, impacts on public health and safety, economic impact, cultural impact; Managing the assessment effort; Chemical hazard and risk assessment; Cumulative impacts of projects over regions and over time; Mitigation options; Case studies: irrigation, hydro power generation and industrialization; Role of environmental and social impact assessment in economic development.

AAE 414: Quantitative Methods in Agricultural Economics II **42 Hours**

Calculus: derivative concept, rules of differentiation, higher order derivatives; Derivatives in economics; Unconstrained optimization; Optimization of multivariable functions; Constrained optimization with Lagrange multipliers; Constrained optimization in economics; Total derivatives; Introduction to matrix algebra: definitions and manipulations, unique properties of matrices; Determinants and matrix inversion in solving systems of linear equations; Time series data analysis.

BEN 415: Intermediate Microeconomics **42 Hours**

Economic models and review of optimization techniques; Consumer theory; Theory of the firm; Industrial organization including price determination under perfect and imperfect markets; Pricing in factor markets; Game theory; Welfare economics focusing on public goods; Welfare maximization; Pareto optimality principle; Externalities; Coarse theorem.

YEAR 4: SEMESTER 2

AAE 421: Agricultural Law and Institutional Analysis **42 Hours**

Principles of law with particular reference to operation of farm business; Legal process governing agricultural production and marketing; Constraint and liability; Specific acts and statutes in the agricultural sector; Need for reforms; The nature of the agricultural economy and development; Legal framework for development of agricultural market regulatory types; Legal organization of agricultural land market; Structure and regulation of agricultural tenancies; Administration of agricultural land use; Organizational structure and conditions of employment of agricultural labor; Legal aspects of credit supply and supervision; Legal regime of agricultural cooperatives; Taxation effects on agricultural production; Role of law in produce markets and marketing; Contemporary and emerging legislations and their effect on agricultural resource use.

AAE 422: Agricultural Policy Analysis **42 Hours**

Agricultural policy and economic development; Role of agriculture in developing countries; Economic planning paradigms; Agricultural policy analysis framework; Methods of policy analysis; Domestic policy environment (factor, product, marketing, land reform and agricultural

research policy); International policy environment (diversification, international credit, regional integration, globalization, international conventions and protocols, role of WTO).

AAE 423: International Agricultural Trade

42 Hours

International economics and its main themes; Theory of international trade: Comparative advantage, the Ricardian model (one-factor economy), specific factors and income distribution, resources and trade; The Heckscher-Ohlin model: Economics of scale and imperfect competition and international trade; International trade policies: tariffs, non-tariff instruments; Political economy of trade policy: Cases for and against free trade, trade policy in developing countries; Import substitution; Trade liberalization; Foreign market access and north-south debate; International negotiations and trade: Regional integration agreements (PTA, FTA, CU, etc), General agreement on Trade and Tariffs (GATT) and World Trade Organization, current state of trade links and obstacles in the greater horn and eastern Africa.

AAE 424: Agribusiness Management Special Project

42 Hours

Project work; Project proposal; Problem identification; Literature review; Formulation of hypothesis; Research design; Proposal presentation; Data collection and analysis; Oral presentation; Report writing.

AAE 425: Environmental and Natural Resources Economics

42 Hours

Economics of the environment: Environmental quality as an economic good; Environmental pollution: global problems, air borne residuals, water borne residuals, solid waste residuals; Market system and pollution: Market failures, property rights, tragedy of the commons; Economics of pollution control: Optimum level of pollution control, remedies for externalities, the bargaining solution, emissions fees, emissions standards and enforcement, transferable emissions permits; Examples of market efficiency; Allocation of specific types of resources: Replenishable but depletable resources (water), renewable common property resources (fisheries), storable renewable resources (forests); Economic rationale of the public sector in environmental management: Need and functions of the public sector, conflicts and limitation in correcting market failure.

BEN 426: Intermediate Macroeconomics**42 Hours**

Key variables of macroeconomics: Employment, prices and national income; Income determination and the multiplier effect; Controlling aggregate demand: Determinants of consumption, investment, consequences of investment, theories and tools of fiscal policy; Money and banking: The nature and history of money, the importance of money, the banking system and the supply of money, monetary policy; Supply of money, monetary policy.

AAE 427: Farm Management**42 Hours**

Definition and scope of management; Unique characteristics of farm management: Planning, implementation and control; Basic economic principles in the context of farm management; Returns to capital, labour, management and owners' equity; Personnel management; Labour laws and regulation; Motivation and group dynamics; Measures of risk: Criteria for decision making under risk and uncertainty; Farm planning techniques; Farm enterprise studies; Performance analysis of the farm business; Value chain and value addition of agricultural products; Market driven agricultural production; Access to markets and market information; Theories of production/expansion path, cost of production and cost curves.