

FACULTY OF FOOD SCIENCE AND TECHNOLOGY

INTRODUCTION

The faculty of Food Science and Technology is one of the three Faculties approved by the National Universities Commission at the inception of the University of Mkar, 2005.

The Faculty Programmes are structured in such a way that they meet the National Universities Commission (NUC) benchmark minimum academic standards. They are also tailored at producing well-motivated Scientists that will meet the global standards of Food Science Technologists.

Food Science is the study of the physical, chemical and microbiological properties of food. Food Technology, on the other hand, is the application of scientific and engineering principles in the production of food to satisfy societal needs. Thus, Food Science and Technology involves the application of scientific knowledge in understanding the physical and biochemical properties of food materials in order to design appropriate processing and handling methods aimed at preserving desirable food quality characteristics and ensuring availability of safe wholesome and nutritious food all year round.

ACADEMIC PROGRAMMES IN THE FACULTY

The Faculty at the moment has two Departments

These are:

1. Department of Food Science and Technology
2. Department of Home Science, Nutrition and Dietetics

The Faculty at the moment offers two degree programmes, namely:

1. B.Sc. (Hons) Degree in Food Science and Technology
2. B.Sc. (Hons) Degree in Home Science, Nutrition and Dietetics

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

ADMISSION REQUIREMENTS

1. UME Entry Requirements

Admission into the B.Sc. Food Science and Technology programme is through the University Matriculation Examination (UME)/ or candidates with five (5) ordinary level credit passes SSC/WASC/GCE/NECO or equivalent passes (at not more than two sittings) categorized as follows:

- a. 3 credits passes in Chemistry, Mathematics and Biology or Agriculture Science.
- b. 2 credits passes in any other subjects.

2. Direct Entry Requirement

1. Holders of the NEW UME requirements plus GCE/HSC "A" level passes in Physics and any one of Chemistry, Mathematics, Botany, Zoology or Biology may be admitted into 200 levels.

1. HND holders with Upper/Lower credit in relevant disciplines who possess the new UME requirements may be admitted to 200 level. NCE holders with credit or higher level in relevant disciplines who possess the new UME requirements may be admitted to 200 level.

COURSE DURATION

The minimum duration of Food Science and Technology programmes last for 3 – 5 years depending on admission and qualification.

- a. UME Entry – 5 years
- b. Direct Entry – 4 or 3 years

COURSE LISTINGS

100 LEVEL

FIRST SEMESTER

1. English and Communication Skills

This course focuses on developing effective study communication, listening and speaking skills.

- Communication: Theory and practice
- Improving Listening Skills
- Developing effective speaking skills
- Strategies for effective reading: Previewing, Skimming and Scanning
- Mastering Basic English Writing Skills
- Writing Reports: Social Science, Technology and Journalistic
- Note-Making, Outlining and Summary Writing
- Style in Communication: Speech and Writing
- Editing and proof-reading strategies
- Report Writing

2. Philosophy and Logic

Aim: to expose students to the meaning of philosophy and a brief survey of its branches with major emphasis on Logic.

- Introduction to nature, scope, notions, branches and problems of philosophy
- Symbolic Logic, definition, fallacies and special symbols: conjunction, affirmation, negation, disjunction, equivalence and conditional statements
- Tort laws: deductions using rules of inference and conditionals and qualification theory
- Insights into the origin and context of traditional philosophy
- Eastern and Western philosophies

Definition of philosophy and various disciplines of philosophy – Epistemology logic and metaphysics. The course will attempt answers to the questions: How can we know? What do we seek to know? Who are we as subjects of knowledge? (Epistemological questions). In logic, some logical fallacies will be discovered. The discipline of metaphysics deals with being and non-being and the order of the universe. A brief survey of western philosophy from Parmenides to Wittgenstein. The emphasis will be on how all these contribute to knowledge in the relevant fields of study at the University of Mkar, Mkar.

3. Use of Library

Aimed at helping students develop effective study skills in the use of the library and other information sources.

- Nature and structure of the Library
- Concept and functions of the Library
- Importance of the Library in the educational process
- Philosophy, objective and purpose of the Library
- How to acquire and develop capacity for independent use of Library resources
- The Library and information collection

- Procedure and process of conducting a Library Research
 - (i) Choosing and adequately restricting a topic
 - (ii) Scouting for materials
 - (iii) Use of note cards and bibliography cards
 - (iv) Preparation of a research paper

Matters of Format: style books and related matters; forms of documentation.

4. Mechanics

Dimensions methods of checking correctness of equations and deriving simple relations. Coordinate systems and frames of reference: Vectors and Scalars; components of a vector and unit vector. Motion: one and two-dimensional motions. Newton's laws and Inertial Frames. Momentum: Conservation Laws. Elastic and inelastic conditions. Work, energy and power: circular motion: simple harmonic motion; Universal Gravitation.

5. Physics Lab I

This introductory course emphasizes quantitative measurements, the treatment of measurement error and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of metres, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light heat, viscosity, etc.

6. Physical Chemistry I

Atoms, molecules and chemical reactions; chemical equations and stoichiometry; atomic structure and periodicity, modern electronic theory of atoms; Radioactivity; chemical bonding; Properties of gases; Equilibrium and thermodynamics; chemical kinetics; electrochemistry, thermochemistry.

7. Practical Physical Chemistry

Experiments in Physical Chemistry covering areas such as Equilibria, thermodynamics, Chemical Kinetics, Electrochemistry and thermochemistry.

8. General Biology

General characteristics of living things. Cell structure and organization. Functions of cellular organelles. Differences between plant and animal cells. Cellular metabolism (photosynthesis, glycolysis, kreb cycle). Cell division. Levels of organization of organisms. The physical and biotic environment. Relationships between organisms. Mendelian genetics and organic evolution.

9. Elementary Mathematics I

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers: integers, rational and irrational numbers, mathematical induction real sequences and series, theory of quadratic equations, binomial theorem, complex numbers; algebra of complex numbers; the Argand Diagram. De Moivre's theorem, n^{th} roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae, Matrix algebra.

10. Electricity and Magnetism

Electrostatics in Vacuum: Electric force; Field and potential; Electric Flux and Gauss's Theories; Capacitors: Current Electricity: magnetic Field in Vacuum. Field due to magnets, earth and Current. Magnetic flux density B for solenoid, straight conductor and narrow circular coil. Biot-savart law, Hall effect, Ampere's Law, Applications. Electromagnetic

Induction; Flux linkage, Faraday and Lenz's laws. Eddy Current. Application; self and mutual inductance, magnetic materials. AC circuit and dielectrics.

11. Health Awareness Education

The aim of this is to provide the student with basic health-related information, which will aid the student in making sound decisions regarding personal health.

- Concept and definition of Terms
- Environmental Protection
- Environmental components that serve basic human physical and physiological needs
- Environmental protection and preservation agencies
- History and Development of medicine
- Nutrition and Exercise
- HIV/AIDS Awareness Education
- Environmental Sanitation
- Substance Abuse and Consumer Health: Introduce students to the use, misuse and abuse of drugs. Emphasize psychological and physiological effects of drugs.

100 LEVEL

SECOND SEMESTER

1. Use of English for Academic purposes

Emphasis will be placed on functional approach to grammar which explores how to express ideas by selecting useful and appropriate grammatical tools, developing effective reading and writing skills across disciplines.

- Basic aspects of English Grammar and common Grammar faults
- Sentence structure, semantic and information
- Essays outlines: Topic and sentence, writing argumentative essays
- The Structure of expository paragraphing following thought patterns
- Text comprehension: Analysis and interpretation, inference and implication, interpreting paragraphs
- Rhetoric: Writing description, definitions, systemic analysis and classification and persuasion.

2. Christian Ethics and Doctrines

This course plays a crucial role in the integration of subject matter through which University of Mkar, Mkar seeks to reflect the wholeness of God's creation.

This integration goes beyond giving students a common educational experience. It is particular in this course that students are introduced to the character and scope of Christian perspective, and they learn to think more critically about choices and decisions affecting their lifestyle.

The course will discuss basic Christian Ethical principles, the Decalogue (Ten Commandments) will be expounded. Some dominant ethical views such as those of Plato, Aristotle, Hume, Kant etc, that have influenced Christian value system for ages will also be briefly explored. Special emphasis will however be on Christian Theistic ethics as a basis for faithful living and learning at a Christian University and at work place.

3. Introduction to Computer and information and communication technology (ICT)

The course shall aim at creating awareness about the use and application of computers and ICT in today's world. At the end of the course, the students are expected to be able to use

computers and other. ICT tools to solve problems and facilitate work in their various courses of study/fields of endeavor.

The course shall cover the following areas:

- Definition and types of computers, characteristics of a computer
- Basic components of a computer system
- Applications of computers, the use of some application packages in various fields
- Data communication, the Internet and the world wide web
- Societal implications of computer usage.

4. Entrepreneurship Development Studies

Objectives: this foundation course aims at imparting entrepreneurial orientation and skills to students at their early stage of life. It seeks to develop and inculcate entrepreneurial knowledge and skills to students with the sole aim of preparing them towards self-reliance by launching and managing their business outfits.

Topics:

- Historical background and introduction to Entrepreneurial Studies
- Definition of Entrepreneurship and entrepreneur, entrepreneurial equation
- Theoretical frame work of entrepreneurship
- Elements and Characteristics of Entrepreneurship
- Qualities of successful entrepreneur
- Entrepreneurship and economic growth
- Fundamental changes that stimulate entrepreneurship
- Entrepreneurial changes that stimulate entrepreneurship
- Entrepreneurial process, benefits of being an entrepreneur and contribution of memorable early entrepreneurs
- Time Management.

5. Plant Systematic

The principal groups of plants, representative life cycles, a generalized survey of such group based on study of the similarities and differences of the external features, ecological adaptations of these forms. Physiology, modes of nutrition, reproduction and growth.

6. Animal Systematics

Principal groups of animals, invertebrate and vertebrate structures, functions and levels of organizations including physiology, nutrition, respiration, excretion, circulatory systems, hormones and reproduction. Generalized survey of animal kingdoms based mainly on study of similarities and differences in the external features, ecological adaptations of these forms.

7. Practical Organic Chemistry

Experiments in Organic Chemistry covering areas such as Isomerism, Determination of structure of organic compounds, Preparation, Isolation and purification of organic compounds. Qualitative and quantitative analysis of organic compounds.

8. Inorganic Chemistry I

Periodic table and periodicity of elements. Chemistry of hydrogen. Study of groups I and II metals; Oxides, hydroxides, halides and aqueous chemistry. Valency forces, structure of solids. Characteristic of the first row transition metals; Oxidation states, redox reactions and complexes. Chemistry of iron and copper. Study of the group VII elements and basic

chemistry of nitrogen., phosphorus, Oxygen and sulphur. Hydrides, oxides, oxo-acids and oxo-anions of the non-metallic elements.

9. Organic Chemistry I

Historical survey of the development and importance of organic chemistry. Nomenclature and classes of organic compounds, homologous series. The carbon atom and bonding. Structural and Optical Isomerisms. Functional groups, conformation, alkanes, alcohols, amines, aldehydes, ketones, carboxylic acid, derivatives of carboxylic acids, benzene compounds and phenols. Determination of structure of Organic compounds; electronic theory in organic chemistry, Preparation, Isolation and Purification of organic compounds, qualitative and quantitative analysis of organic compounds.

10. Elementary Mathematics II

Geometric representation of vectors in 1 – 3 dimensions, components, direction cosines. Addition, Scalar multiplication of vectors, linear independence. Scalar and vector products of two vectors. Differentiation integration of vectors with respect to a scalar variable. Two dimensions coordinate geometry, straight lines, circles parabola, ellipse, hyperbola. Tangents, Kinematics of a particle. Components of velocity and acceleration of a particle moving in a plane. Force and momentum, laws of string, simple pendulum impulse. Impact of two smooth sphere and of a sphere on a smooth sphere on a smooth sphere, vector equations of lines and planes.

11. Elementary Mathematics III

Functions of a real variable, graphs limits and idea of continuity. The derivative as limit of rate of change. Techniques of differentiation. Extreme curve sketching; integration as an inverse of differentiation. Methods of integration. Definite Integral. Application to volumes.

12. Practical Inorganic Chemistry

200 LEVEL

FIRST SEMESTER

1. Nigerian People: Culture and Language

- General Survey of indigenous culture, areas and their characteristics
- History of Nigeria under colonial and post – colonial era
- Contemporary issues in Nigerian Education, economy, politics and social Justice
- Language thought and culture
- Theories of languages
- Languages and history
- Preamble to African Linguistics
- Peace Studies and Conflict Resolutions.

2. Introducing Microbiology

Prokaryotic and eukaryotic cells. Morphology, growth and reproduction of micro-organisms, nutrition, metabolism and economic importance of microbial taxonomy with particular reference to bacteria., Fungi and viruses. Effect of environmental factors on growth, survival and inhibition of micro-organisms. Brief survey of microbes as friends and foes.

3. Engineering Drawing I

Use of draughting instruments, lettering, dimensioning, layout. Engineering graphics, geometrical figures, comics, Graphical calculus and application. Development intersection of curves and solids.

4. Statistics for Physical Science and Engineering

5. Organic Chemistry II

Factors affecting structure and physical properties of organic compounds; factors affecting availability of electrons, chemical bonding in Carbon compounds, bond length, conformation in acyclic molecules and cyclohexane systems, stereoisomerism. Methane energy of activation and free radical substitution reactions in alkanes, functional group chemistry classification of organic reactions, reactions of nucleophiles, electrophilic addition reactions and aromatic substitutions, reactions of carbanions, Aldol and Claisen reactions. Grignard, Organoboranes and witting reactions.

6. Second Year Practical Chemistry I

Experiments in Chemistry covering areas such as phase equilibria, chemical kinetics, electrochemistry surface tension and inorganic preparation and analysis covering acid-base and Redox reactions.

7. Linear Algebra I

Vector space over the real field. Subspaces, linear independence, basis and dimension. Linear transformations and their representation by matrices-range, null space, rank. Singular and non-singular transformation and matrices Algebra of matrices.

8. Genetics

Pre-requisite: bio 101 Heritable and non-heritable characteristics. Variation in genome structure. Quantitative inheritance. Monophybrid and dihybrid ratios using probability and ci-square method. Behaviour of chromosomes in mitosis. Introduction to population genetics.

200 LEVEL

SECOND SEMESTER

1. History and Philosophy of Science

- Origin of science
- General introduction and theories about the Universe
- Definition and History of Technology
- Scientific methodology (empiricism)
- Effects of chemicals, plastic, wastes on environment
- Various areas of Science and Technology
- Energy Resources.

2. Entrepreneurship Development Studies

Exposing students to the various opportunities in entrepreneurship and the basic requirements needed for succesful practical performance as entrepreneurs. Related biographical Studies of entrepreneurs and Management giant will be taken as case studies.

- How to generate entrepreneurial ideas and translate them to action
- Source and approaches and constraints of launching business
- Youths and money Mangement
- Investment: Introduction to capital market

- Factors that influence entrepreneurship
- Forms of Business Organizations.

SME's: Challenges, prospects, Management and financing in Nigeria.

- Their advantages and disadvantages
- Planning of Enterprise
- The practice of entrepreneurship
- Feasibility studies
- Practical aspects of entrepreneurship: Tailoring, carpentry, Millenery (hat making) catering, shoe making, interior decoration, software development, Soap making, Fishery etc.

3. Engineering Drawing II

Projection of Points, laminae in space, auxillary views and mixed projections. Working drawings- Detailed and semi-detailed. Assembly drawing of Machines, devices and installation layout. Reading of Industrial drawings.

4. Second Year Practical Chemistry II

Determination of melting and boiling points of pure substances. Organic preparations and analysis separation methods based on precipitation, distillation, solvent attraction and Ion exchange. Spectrophotometric measurements (using organic/inorganic compounds) employing UV-Visible spectrophotometer.

5. Physical Chemistry II

Kinetic theory of gases: Behaviour of real gases. The laws of thermodynamics; Entropy, Enthalpy and Free energy. Reactions and phase equilibria; Reaction rates; Rate Laws; Mechanism and theories of elementary processes; Photochemical reactions; Basic electrochemistry; adaption and structure of solids films, colligative properties of dilute solutions.

6. Statistical Methods

7. Introduction to Home Science, Nutrition and Dietetics

Philosophy, Scope, Objectives and Historical development Home Economics. Examination of basic human needs with respect to food, clothing, shelter and health. Programme approaches in Home Economics which will help meet these needs. Preparation of careers in a variety of occupation.

8. Introduction to Food Science and Technology

Review of global food situation with emphasis on Nigerian. Introduction to Micro flora of food. Physical, chemical and biological principles of food processing and preservation. Engineering units and dimensions.

9. Introducing Microbiology

Historical aspects: Scope of Microbiology, general characteristics of micro-organisms, principles of Sterilization, pure culture and media, problems of infectivity.

10. Heat and Properties of Matter

Molecular treatment of properties of matter: elasticity; Hooke's law, Young's Shear and bulk moduli. Hydrostatics; Pressure: Buoyancy. Archimedes' Principles, Hydrodynamics streamlines, Bernoulli and continuity equations, turbulence, Reynold's numbers. Viscosity;

Laminar flow, Poiseuille's equation. Surface tension; adhesion, cohesion, Capillary; drops and bubbles. Temperature; the zeroth law of thermodynamics, heat; gas laws; laws of thermodynamics; kinetic theory of gases, application.

11. Analytical Chemistry I

Theory of errors; statistical treatment of data; theory of sampling, chemical methods of analysis including volumetric, gravimetric physicochemical methods, optical methods of analysis; separation methods: chromatography TLC, paper, column. Solvent extraction, ion exchange, electrophoresis and dialysis, colorimetry, Radiochemical methods e.g. scintillation counters.

12. Inorganic Chemistry II

Chemistry of first row transition metals. Introduction to Coordination chemistry including elementary treatment of crystal field theory. Comparative chemistry of the following: (a) Ga, In, Tl, (b) Ge, Sn, Pb (c) As, Sb, Bi (d) Se, Te, Po. Elementary Introduction to Organometallic chemistry. Role of metals in biochemical systems.

13. Physics Lab II

This introductory course emphasizes quantitative measurements, the treatment of measurement errors, and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, etc covered in.

300 LEVEL

FIRST SEMESTER

1. Post-harvest Physiology and Storage Technology

Post-Harvest physiology of horticultural commodities. Control of post-harvest losses. Refrigeration and cooling systems. Handling and storage of roots, tubers, cereal grains and fruits and vegetables and legumes. Measurement of environmental factors on the quality parameters of stored products. Buildings and other structures for food storage.

2. Food Rheology

Deformation, elasticity and flow; viscosity of fluid food materials, viscosity of dilute and concentrated suspensions rheology (thixotropy); viscoelasticity frictional losses in flow through fitting, bends, etc, mechanical energy balance; flow of powders.

3. Food Biochemistry

Water and its properties, Protein: classification, structure and properties, protein biosynthesis. Food enzymes, nature, classification and properties. Carbohydrates in foods: classification structure and properties, uses in food processing. Lipids in food, classification and structure, saturated and unsaturated fatty acids. Food uses of lipids pigments, carotenoids, chlorophyll, anthocyanins and flavonoids.

4. Food Chemistry

Naturally occurring constituents of foods, the structure, chemical and physical properties of food and the significance. Food additive, chemical, physical and biochemical changes that occur in food during handling, processing and storage.

5. Fundamentals of Food Processing

Food processing plant location. Design consideration of the food processing plant. Raw materials handling. Basis methods of food processing and preservation; thermal, low temperature, dehydration, concentration, fermentation, Irradiation.

6. Principles of Human Nutrition

Situation of nutrition in Nigeria. Protein-caloric, malnutrition. Metabolism of carbohydrates, proteins. Lipids, based metabolism. Important minerals and vitamin deficiencies, their etiology and control Antinutritional factors in food. Food balance sheets, food composition tables and recommended dietary allowance. Nutritional problems of affluence.

7. Engineering Thermodynamics

Basic concepts, deformation laws. The ideal gas. Heat and work. First law of thermodynamics application to open and closed systems. The steady state flow equation.

8. Introduction to Agricultural Extension and Rural Sociology

Need for agricultural extension. Basic philosophies of agricultural extension work. Basic concepts and principles of rural sociology. Importance of rural communities and Institutions. Agricultural extension teaching methods.

300 LEVEL

SECOND SEMESTER

1. Food Microbiology I

General characteristics of Micro-organisms important to foods Bacteria, Molds and Yeasts. Microbial structure. Cultivation, Nutrition and Growth of Microbes. Principles of food preservation.

2. Sensory Evaluation of Foods

The human senses of olfaction and gustation. Taste and smell receptors, mechanism of taste and smell perception. Sensory (organoleptic) assessment of processed foods to determine acceptability. Operating conditions, assessment scores and statistical conditions-interpretation of data.

3. Food Analysis

The principles and application of analytical methods. Preparation of standard solutions and buffer capacity. Refractometry, hygrometry and gravimetric. Physical and chemical analysis of water and other major foods.

4. Food Machinery

Design features and functions of equipment used in the food industry, e.g. equipment for cleaning, sorting, grading, size reduction, mixing, homogenization, filtration, centrifugation etc. Electric motors.

5. Heat and Mass Transfer

Heat transfer theory-heat conduction. Steady and unsteady State heat transfer. Convective heat transfer and coefficient, of Natural, forced convection, laminar and turbulent conditions heat radiation and transfer diffusion and convective process. Use of dimensional analysis. Heat transfer to boiling liquids –nucleate film. Simultaneous heat and mass transfer. Heat exchangers commonly used in the food processing industry.

6. Principles of Crop Production

Introduction to crop distribution and production in Nigeria in relation to environment, Climatic, biotic, edaphic, cropping systems and crop cultural management practices including pest control.

7. Principles of Animal Production

Animal production and its development. The livestock industry problems and prospects. Description of the breeds of cattle. Sheep, goats, pigs, poultry and rabbits. Systems of livestock production. Feeding habits of farm animals. Principles of breeding. Management of farm animals.

8. Optics Sound and Waves

Physical optics: Spherical waves, interference and diffraction, thin films, crystal, holography, dispersion and scattering. Geometrical optics: waves and rays, reflection at spherical surface, thin lens optical lenses. Mirrors and prisms.

400 LEVEL

FIRST SEMESTER

1. Technical Writing and Presentation

Introduction to report writing and presentation General survey and information retrieval. Analysis of data and discussion of significant findings, including summary. Emphasis should be placed on professional report writing.

2. Food Microbiology

The microflora of foods and its relation to food preservation and spoilage. Microbiological examination of water and foods, food infection and poisoning. Public health and sanitation.

3. Food Processing Engineering

Thermodynamic properties of food materials. Basic concept of fluid flow. Power requirements for pumping fluids in the food industry. Pipeline design. Application on the theory of heat, mass transfer to thermal processing with emphasis on canning of; (i) conduction, and (ii) convection packages of foods. Methods of calculating lethal rates, heat penetration value, temperature distribution profiles and process time should be addressed.

4. Food Processing Plant Design and Pilot Plant Demonstration

Plant layout in the food industry. Economics of process design and optimization techniques optimum design of food processing plants.

5. Cereals, Grains and Oil seeds Technology

Technology and chemistry of the principal cereals. Conventional milling processes, use of products and byproducts. Baking, protein-enriched cereal product. Nutritional consideration.

6. Food Additives and Toxicology

Additive and contamination's importance and safety. Sources of toxin, interaction of toxin synthetic chemical with food antagonists and promotes food processing and generation, destruction of food toxins.

7. Instrumental Methods of Food analysis

Use of spectroscopy. Ultraviolet, visible, infra-red, flame, atomic absorption, fluorescence, manometry, chromatography and other techniques for the analysis of food constituents and additives.

ELECTIVES

1. Introduction to Farm Management and Production Economics

Theory of production. Principles of agricultural production and resource use, factor-factor, factor-product and product-product relationship. consumption and resource allocation in Agriculture, Farm costs and revenue theories. Farm budgeting and analysis.

2. Human and Community Nutrition

Principles of energy balance in man. Dietary intake and nutrition requirements in pregnancy and lactation of infants and children. Adolescent and adult nutrition as it affects learning and mental development. Biochemistry and physiology of malnutrition and starvation factors in the community influencing nutritional status, economic and socio-cultural. Methods of assesment and implementation. Community nutrition programmes and education.

3. Consumer Education

Definition and principles of consumer education and analysis of economic forces affecting individuals and families as consumers of goods and services; creating awareness of the rights and responsibilities of consumer in the market place, developing aids and techniques to changing intelligent choices of foods and services, political, social, economic and legal implication of consumer decisions and actions.

400 LEVEL

SECOND SEMESTER

1. Students Industrial Work Experience Scheme

500 LEVEL

FIRST SEMESTER

1. Food Packaging

Functions of packing. Types and characteristics of packaging materials, testing for structural quality and performance. Packing requirement for fresh and processed foods for local and foreign markets.

2. Fruits, Vegetables, Roots and Tubers Processing

Preservation of fruits and vegetables. Harvesting and preprocessing operation. Quality factors involved in cooling, freezing, canning, sugar, salt and other preservation procedures.

3. Meat and Poultry Product Technology

Processing meat, Poultry and eggs. Aging, tenderizing and curing of meat. Manufacture of sausages and other table-meats. Smoking, freezing, Canning, irradiation of meats, poultry, intermediate moisture meats. Meat pasteurization, freezing, dehydration.

4. Fermented Food Products

Production of microbial enzymes, types of fermentation and associated microorganisms. Use of micro-organisms in industrial production of bread, vinegar, yoghurts, vitamins, amino

acids, flavours, production operation and chemistry. Microbiology and technology of local and oriental fermented foods e.g. gari, ogi, fufu, temphe akpu etc. spoilage and preservation of fermented food.

5. Food Product Development and Small Scale Industries

A study of the sequence of event involved in the development and marketing of new food products, especially on the physiochemical principles of food fabrication and the economics of new product development. Nutritional considerations in selected fabricated foods.

6. Food Freezing and Cold Storage

Thermodynamic properties of refrigerants. Analysis and operation of refrigerations systems, available methods of food freezing and the methods of predicting freezing time. Graphical methods of unsteady state cooling of foodstuffs, calculation of refrigeration load requirements, cold storage of perishable foods – optimum condition. Selection of equipment and economic operations.

7. Seminar

Seminar discussion bases on undergraduate projects and reports. Recent developments and advances as well as selected topics in Food Science and Technology.

ELECTIVE

1. Malting and Brewing Technology

Outline of malting and brewing, biochemistry of malting grain. Malting conditions and malt types. Technology of malting and killing. Brewing water. Chemistry and Bio-chemistry of mashing. Mashing methods. Wort boiling and hop extraction. Microbial contamination in breweries. Chemical and physical properties of beer, beer flavour and quality.

2. Biotechnology

Biotechnology as applicable to food and agriculture. Mushroom production, citric and lactic acid manufacture. Microbes as a source of protein (SCP). Energy from food and agricultural wastes - biogas. Production of Mircobial enzymes and primary metabolities used in food processing.

500 LEVEL

SECOND SEMESTER

1. Milk and Dairy Products Technology

Technology of milk and milk products; condensed and dehydrated, milk chilled icecream, chees dairy waste.

2. Processing of Miscellaneous Food Commodities

Processing of cocoa, tea, coffee, confectionery ad soft drinks.

3. Food Standards and Quality Control

The importance of food standards and legislation. Codex Allimentarius. The food standard and legislation of Nigeria. Principles and methods of food quality control.

4. Process Control and Instrumentation

Introduction to process control – open and closed loop system. Feedback and feed forward control; response of control loops, frequency response, experimental model demonstration. Introduction to process dynamics and signals. First and second order systems response first order system. Laplace phase transformations and transfer functions. Process instrumentation measuring instruments oscilloscopes, strain gauges, chart strain recorders, thermocouples, etc. D.C. and A.C. motors; control valves. Automatic process control.

5. Aquatic and Sea Food Processing Technology

Difference between Fish and meat; classes of fish and meat; classes of fish, marine and fresh water identification. Fish chemical composition and nutritive value of fish. Processing methods curing, salting, sun drying, freezing, canning.

6. Final Year Project

Approved research projects involving topics chosen from any of the broad areas of Food Science and Technology.

DEPARTMENT OF HOME SCIENCE, NUTRITION AND DIETETICS

ADMISSION REQUIREMENTS

1. University matriculation examination UME:

5 SSCE/WASC/GCE '0' Level NECO or equivalent credit passes (at not more than 2 sittings). Categorized as follows:

- A. 3 credit passes in Mathematics, Chemistry and Biology or Agriculture Science.
- B. 2 credit passes in any other subjects, Food and Nutrition, Home Management, Clothing and Textiles, Physics, Hotel and Catering Management, credit or pass in English Language.

2. Direct Entry: (DE):

Holders of UME requirements plus HSC/GCE 'A' Level/NECO credit passes in Mathematics, Biology and Physics or Chemistry may be admitted to 200 level.

HND- Holders with Credit or higher level in relevant disciplines who possess the new UME requirements may be admitted to 200 level. While NCE holder with merit in relevant disciplines who possess the new UME requirements may be admitted to 200 level.

SUMMARY OF COURSE STRUCTURE

LEVEL 100

FIRST SEMESTER

1. English and Communication Skills

This course focuses on developing effective study communication, listening and speaking skills.

- Communication: Theory and practice
- Improving Listening Skills
- Developing effective speaking skills
- Strategies for effective reading: Previewing, Skimming and Scanning
- Mastering Basic English Writing Skills
- Writing Reports: Social Science, Technology and Journalistic

- Note-Making, Outlining and Summary Writing
- Style in Communication: Speech and Writing
- Editing and proof-reading strategies
- Report Writing

2. Philosophy and Logic

Aim: to expose students to the meaning of philosophy and a brief survey of its branches with major emphasis on Logic.

- Introduction to nature, scope, notions, branches and problems of philosophy
- Symbolic Logic, definition, fallacies and special symbols: conjunction, affirmation, negation, disjunction, equivalence and conditional statements
- Tort laws: deductions using rules of inference and conditionals and qualification theory
- Insights into the origin and context of traditional philosophy
- Eastern and Western philosophies

Definition of philosophy and various disciplines of philosophy – Epistemology logic and metaphysics. The course will attempt answers to the questions: How can we know? What do we seek to know? Who are we as subjects of knowledge? (Epistemological questions). In logic, some logical fallacies will be discovered. The discipline of metaphysics deals with being and non-being and the order of the universe. A brief survey of western philosophy from Parmenides to Wittgenstein. The emphasis will be on how all these contribute to knowledge in the relevant fields of study at the University of Mkar, Mkar.

3. Use of Library

Aimed at helping students develop effective study skills in the use of the library and other information sources.

- Nature and structure of the Library
- Concept and functions of the Library
- Importance of the Library in the educational process
- Philosophy, objective and purpose of the Library
- How to acquire and develop capacity for independent use of Library resources
- The Library and information collection
- Procedure and process of conducting a Library Research
- (v) Choosing and adequately restricting a topic
- (vi) Scouting for materials
- (vii) Use of note cards and bibliography cards
- (viii) Preparation of a research paper

Matters of Format: style books and related matters; forms of documentation.

4. Physical Chemistry I

Atoms, molecules and chemical reactions; chemical equations and stoichiometry; atomic structure and periodicity, modern electronic theory of atoms; Radioactivity; chemical bonding; Properties of gases; Equilibrium and thermodynamics; chemical kinetics; electrochemistry, thermochemistry.

5. Introduction to Computer Science

History of computers, functional components of computers, characteristics of a computer. Problem solving; flow, charts, Algorithms, computer programming, statements, symbolic names; arrays, subscripts, expressing and control statements. Introduction to BASIC OR FORTRAN programming language, computer applications.

6. Elementary Mathematics I

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers: integers, rational and irrational numbers, mathematical induction real sequences and series, theory of quadratic equations, binomial theorem, complex numbers; algebra of complex numbers; the Argand Diagram. De Moivre's theorem, 11th roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae, Matrix algebra.

7. Health Awareness Education

The aim of this is to provide the student with basic health-related information, which will aid the student in making sound decisions regarding personal health.

- Concept and definition of Terms
- Environmental Protection
- Environmental components that serve basic human physical and physiological needs
- Environmental protection and preservation agencies
- History and Development of medicine
- Nutrition and Exercise
- HIV/AIDS Awareness Education
- Environmental Sanitation
- Substance Abuse and Consumer Health: Introduce students to the use, misuse and abuse of drugs. Emphasize psychological and physiological effects of drugs.

8. General Biology I

General characteristics of living things. Cell structure and organization. Functions of cellular organelles. Differences between plant and animal cells. Cellular metabolism (photosynthesis, glycolysis, Krebs cycle). Cell division. Levels of organization of organisms. The physical and biotic environment. Relationships between organisms. Mendelian genetics and organic evolution.

9. Electricity and Magnetism

Electrostatics in Vacuum: Electric force; Field and potential; Electric Flux and Gauss's Theories; Capacitors: Current Electricity: magnetic Field in Vacuum. Field due to magnets, earth and Current. Magnetic flux density B for solenoid, straight conductor and narrow circular coil. Biot-Savart law, Hall effect, Ampere's Law, Applications. Electromagnetic Induction; Flux linkage, Faraday and Lenz's laws. Eddy Current. Application; self and mutual inductance, magnetic materials. AC circuit and dielectrics.

10. Physics Lab I

This introductory course emphasizes quantitative measurements, the treatment of measurement error and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of metres, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light heat, viscosity, etc.

11. Introduction to Textile Fibers

Introduction of Textiles, an overview of textiles terminology and their definitions. Fiber classification, properties, identification using microscope tests, burning test and solubility test. Physical and chemical properties of fibers (natural and synthetics). General and specific finishes of fibers, dyes and dyeing. Care of textiles, selection, uses for home and apparel.

LEVEL 100 SECOND SEMESTER

1. Use of English for Academic Purpose

Emphasis will be placed on functional approach to grammar which explores how to express ideas by selecting useful and appropriate grammatical tools, developing effective reading and writing skills across disciplines.

- Basic aspects of English Grammar and common Grammar faults
- Sentence structure, semantic and information
- Essays outlines: Topic and sentence, writing argumentative essays
- The Structure of expository paragraphing following thought patterns
- Text comprehension: Analysis and interpretation, inference and implication, interpreting paragraphs
- Rhetoric: Writing description, definitions, systemic analysis and classification and persuasion.

2. Christian Ethics and Discipline

This course plays a crucial role in the integration of subject matter through which University of Mkar, Mkar seeks to reflect the wholeness of God's creation.

This integration goes beyond giving students a common educational experience. It is particular in this course that students are introduced to the character and scope of Christian perspective, and they learn to think more critically about choices and decisions affecting their lifestyle.

The course will discuss basic Christian Ethical principles, the Decalogue (Ten Commandments) will be expounded. Some dominant ethical views such as those of Plato, Aristotle, Hume, Kant etc, that have influenced Christian value system for ages will also be briefly explored. Special emphasis will however be on Christian Theistic ethics as a basis for faithful living and learning at a Christian University and at work place.

3. Introduction to Computer

The course shall aim at creating awareness about the use and application of computers and ICT in today's world. At the end of the course, the students are expected to be able to use computers and other ICT tools to solve problems and facilitate work in their various courses of study/fields of endeavor.

The course shall cover the following areas:

- Definition and types of computers, characteristics of a computer
- Basic components of a computer system
- Applications of computers, the use of some application packages in various fields
- Data communication, the Internet and the world wide web
- Societal implications of computer usage.

4. Entrepreneurial Development Studies

Objectives: this foundation course aims at imparting entrepreneurial orientation and skills to students at their early stage of life. It seeks to develop and inculcate entrepreneurial knowledge and skills to students with the sole aim of preparing them towards self-reliance by launching and managing their business outfits.

Topics:

- Historical background and introduction to Entrepreneurial Studies
- Definition of Entrepreneurship and entrepreneur, entrepreneurial equation

- Theoretical frame work of entrepreneurship
- Elements and Characteristics of Entrepreneurship
- Qualities of successful entrepreneur
- Entrepreneurship and economic growth
- Fundamental changes that stimulate entrepreneurship
- Entrepreneurial changes that stimulate entrepreneurship
- Entrepreneurial process, benefits of being an entrepreneur and contribution of memorable early entrepreneurs
- Time Management.

5. Inorganic Chemistry I

Periodic table and periodicity of elements. Chemistry of hydrogen. Study of groups I and II metals; Oxides, hydroxides, halides and aqueous chemistry. Valency forces, structure of solids. Characteristic of the first row transition metals; Oxidation states, redox reactions and complexes. Chemistry of iron and copper. Study of the group VII elements and basic chemistry of nitrogen., phosphorus, Oxygen and sulphur. Hydrides, oxides, oxo-acids and oxo-anions of the non-metallic elements.

6. Elementary Mathematics

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers: integers, rational and irrational numbers, mathematics induction real sequences and series, theory of quadratic equations, binomial theorem, complex numbers; algebra of complex numbers; the Argand Diagram. Demoivre's theorem, 11th roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae, Matrix algebra.

7. Organic Chemistry I

Historical survey of the development and importance of organic chemistry. Nomenclature and classes of organic compounds, homologous series. The carbon atom and bonding. Structural and Optical Isomerisms. Functional groups, conformation, alkanes, alcohols, amines, aldehydes, ketones, carboxylic acid, derivatives of carboxylic acids, benzene compounds and phenols. Determination of structure of Organic compounds; electronic theory in organic chemistry, Preparation, Isolation and Purification of organic compounds, qualitative and quantitative analysis of organic compounds.

8. General Biology II

General characteristics of living things. Cell structure and organization. Functions of cellular organelles. Differences between plant and animal cells. Cellular metabolism (photosynthesis, glycolysis, kreb cycle). Cell division. Levels of organization of organisms. The physical and biotic environment. Relationships between organisms. Mendelian genetics and organic evolution.

9. Physics Laboratory II

This introductory course emphasizes quantitative measurements, the treatment of measurement errors, and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, etc covered in.

10. Heat and Properties of Matter

Molecular treatment of properties of matter: elasticity; Hooke's law, Young's Shear and bulk moduli. Hydrostatics; Pressure: Buoyancy. Archimedes' Principles, Hydrodynamics streamlines, Bernoulli and continuity equations, turbulence, Reynold's numbers. Viscosity; Laminar flow, Poiseuille's equation. Surface tension; adhesion, cohesion, Capillary; drops and bubbles. Temperature; the zeroth law of thermodynamics, heat; gas laws; laws of thermodynamics; kinetic theory of gases, application.

11. Introduction to Home Science, Nutrition and Dietetics

Definition, design and classification of food laboratory equipment and tools; requirement and specification for installation and operation large and all equipment, methods of evaluating equipment preference, use and routine care of equipment and special maintenance practices of equipment and environment. Kitchen geometry, planning and sketching of standard kitchen. Kitchen hygiene and safety in the kitchen/laboratory.

200 LEVEL

FIRST SEMESTER

1. Nigerian People: Culture and Language

2. General Survey of indigenous culture, areas and their characteristics
3. History of Nigeria under colonial and post – colonial era
4. Contemporary issues in Nigerian Education, economy, politics and social Justice
5. Language thought and culture
6. Theories of languages
7. Languages and history
8. Preamble to African Linguistics
9. Peace Studies and Conflict Resolutions.

10. Organic Chemistry II

Factors affecting structure and physical properties of organic compounds; factors affecting availability of electrons, chemical bonding in Carbon compounds, bond length, conformation in acyclic molecules and cyclohexane systems, stereoisomerism. Methane energy of activation and free radical substitution reactions in alkanes, functional group chemistry classification of organic reactions, reactions of nucleophiles, electrophilic addition reactions and aromatic substitutions, reactions of carbanions, Aldol and Claisen reactions. Grignard, Organoboranes and Wittig reactions.

11. Mathematical Methods

Real-valued functions of a real variable. Review of differentiation and integration and their applications. Mean value theorem. Taylor series. Real valued functions of two or three variables. Partial derivatives chain rule extreme, language multipliers. Increments, differentials linear approximations. Evaluation of line, integrals. Multiple integrals.

12. Elementary Modern Physics

Special relativity, defects in Newtonian mechanics; the speed of light: the Lorentz transformation: transformation of velocities. Experimental basis of quantum theory: black body radiations; electronics and Quanta, Bohr's theory of atomic structure; DeBroglie hypothesis. The uncertainty principles; Schrodinger's equation and simple applications.

13. Introduction to Biochemical Important Compounds

14. Introduction to Agriculture

The definition of Agriculture history and importance of agriculture to man. Agriculture and natural environment, world population and food supply. Characteristics features of tropical agriculture and how they affect production, distribution and utilization agriculture products, Land use and tenure. Measures of improving Nigerian agriculture. Climatic Adapted and soil factors in relation to crop production and distribution in Nigeria. Systems of crop farming and changes, types, distributions and significance of farm animals. Basic principles of animal farming. Place of forestry, fishing, farming and wildlife in agriculture. The importance of education, training and extension in agriculture.

15. Introduction to Anatomy and Physiology

General anatomy of farm animals, cell biology. The structure of the cell, molecular components, and the metabolism of one cell nucleus, enzymes and bioenergetics, cell production and cell secretion. Physiology of the body fluids, water, electrolytes, physiology of excitable tissues, Cardiovascular and respiratory systems, monogastric and ruminant physiology, sense organs and sight, muscular system energy, metabolism and vitamins, the skin and associated structures, reproductive organs, mammary glands.

16. Introduction to Child Development

Pregnancy, preparation for the baby's arrival. Birth-types and stages of labour, maternal care, care of the neonate; feeding, clothing and health of the new baby. Every day care-bathing, keeping the baby warm, sleeping, exercising etc. Teething problems, weaning and weaning foods. Toilet training, growth aids hindrances, how to check growth.

17. Marriage and Family

Processes of mate selection, preparation for marriage. Adjustments and interaction in marriage laws and customs affecting marriage in different cultures with special emphasis on Nigeria; marriage and family institutions; responsibilities in varying family systems and meeting challenges/crisis in family relationships caused by social change.

18. Basic Principles of Economics

The theory of consumer behaviour, supplies and demand functions. Utility performance, elasticity, income, price and substitution effect on consumer surplus. Theory of production, pricing of factors of production. Theories of determination of wages, rents, interest, profits. The nature and scope of macroeconomics. The theory of investment. The theory of economic growth. Business cycle and problem of economic activity. Theory of international economics.

19. Introduction to Home Management

Home Management concept. Sanitation; sanitary conditions, drainage, sewage systems and effective disposal of waste. Maintenance and care of home; cleaning agents and materials (care of floor, surfaces, ornaments in home furnishing, cleaning of home surroundings). Utilities in the home (water, electricity and fuel). Principles of Art and design: Home decoration.

20. Introduction to Clothing

200 LEVEL

SECOND SEMESTER

1. History and Philosophy of Science

2. Origin of science
3. General introduction and theories about the Universe
4. Definition and History of Technology
5. Scientific methodology (empiricism)
6. Effects of chemicals, plastic, wastes on environment
7. Various areas of Science and Technology
8. Energy Resources.

9. Organic Chemistry II

Factors affecting structure and physical properties of organic compounds; factors affecting availability of electrons, chemical bonding in Carbon compounds, bond length, conformation in acyclic molecules and cyclohexane systems, stereoisomerism. Methane energy of activation and free radical substitution reactions in alkanes, functional group chemistry classification of organic reactions, reactions of nucleophiles, electrophilic addition reactions and aromatic substitutions, reactions of carbanions, Aldol and Claisen reactions. Grignard, Organoboranes and Wittig reactions.

10. Mathematical Methods

Real-valued functions of a real variable. Review of differentiation and integration and their applications. Mean value theorem. Taylor series. Real valued functions of two or three variables. Partial derivatives chain rule extreme, Lagrange multipliers. Increments, differentials linear approximations. Evaluation of line, integrals. Multiple integrals.

11. Introduction to Home Science and Management

Philosophy, scope, political and historical development of Home Science and Management. Examination of basic human needs with respect to food, clothing, shelter and health. Program approaches in Home Science and Management which will help meet these needs. Preparation for Careers in a variety of occupations.

12. Introduction to Biochemical Important Compounds

13. Statistical Methods

14. Principles of Rural Society

Classification of social systems, interpersonal relationships. Personality traits and leadership qualities. The role of the media, meaning, scope and indices of development; historical factors of development, self reliance and natural through public enterprises and agencies, peaceful co-existence among nations.

15. Introduction to Food Science and Technology

Review of global food distribution with emphasis on Nigeria. Introduction of foods, physical, chemical and biological principles of food processing and preservation. Engineering units and dimensions applicable to the food industry.

16. Entrepreneurial Development Studies

Exposing students to the various opportunities in entrepreneurship and the basic requirements needed for successful practical performance as entrepreneurs. Related biographical Studies of entrepreneurs and Management giant will be taken as case studies.

- How to generate entrepreneurial ideas and translate them to action
- Source and approaches and constraints of launching business

- Youths and money Management
- Investment: Introduction to capital market
- Factors that influence entrepreneurship
- Forms of Business Organizations.

SME's: Challenges, prospects, Management and financing in Nigeria.

- Their advantages and disadvantages
- Planning of Enterprise
- The practice of entrepreneurship
- Feasibility studies
- Practical aspects of entrepreneurship: Tailoring, carpentry, Millenery (hat making) catering, shoe making, interior decoration, software development, Soap making, Fishery etc.

17. Principles and Administration of Child Care Programmes

Principles, objectives and types of child care programmes; decisions or establishment of programme(s), getting prepared and organized, understanding children and their special needs. Keeping children safe, providing nutritious food, discipline and guidance, recognizing and handling child abuse and neglect, working with parents.

300 LEVEL

FIRST SEMESTER

1. Food Biochemistry

2. Introduction to Design, Pattern Drafting and Alternation

Introduction to basic principles of design to apparel and drawing, techniques used in development, alteration and styling of pattern through use of pattern drafting, flat pattern design and commercial patterns.

3. Child and Human Development II

Basic theories of development from infancy through adulthood. Awareness and understanding of the physical, social, emotional and intellectual aspects of human growth and development in infancy; childhood, and adolescence, early and late adulthood; influence of the family, home and community environment on personality development in a changing society; problems of pregnancy, human reproduction and conception. Introduction studies of children and their caretakers in the family, and setting outside the home. (The department should establish a day-care centers and nursery schools for students to practicalized what they have learn theoretically).

4. Personal, Family and Community Health

Concept of health, recognizing and coping the problems. Level of prevention; environmental sanitation. Diseases spread by water, food and air. Common health problems in Nigerian communities, diseases that can be prevented by immunization, terminal diseases (HIV,AIDS,TB, etc) with their diet therapy. Governmental and voluntary in and outside the home; family adjustments to health crisis and community organization in health.

5. Principles of Resource Management

Theories and concepts of using individual, family and community resources; identification of existng resources; values and goals in management; decision making process; farm, home and business management and their interfaces; model for use of existing resources; resources

productivity; identification of potential resources, organizing access to finances; maintenance culture in environmental and resource development.

6. Fundamentals of Food Processing

Food processing plant location; dressing consideration of food processing plants; raw material handling. Basic methods of food processing and preservation. Thermal, low temperature, dehydration, concentration, fermentation and irradiation.

7. Principles of Food Preparation and Management

Concepts of food and meal management, meal planning and management. Table manners, table setting, serving of meals. Formal, informal buffet dole method. Institutional use of wines, non alcoholic beverages in meal management, meals for special occasions for example: wedding, birthday, naming ceremonies, cocktail parties, dinner/luncheons/buffet. Meals could be as follows: cakes, doughnuts, jollof rice, fried/roasted meat (beef) or chicken or fish, turkey, vegetable salad, soft drinks, fruit juice, milk drinks, chop-one-chop-two, chin-chin, roasted groundnuts, meal ball or yam croquette, scotch eggs, popcorn, moin-moin, massa, dodo, fried plantain, etc.

8. Principles of Human Nutrition

9. Introduction to Agricultural Extension and Rural Sociology

The need for agriculture extension. Agricultural extension in the world and in Nigeria. Basic philosophies behind agricultural extension work. The institutional setting of agricultural extension. Basic concepts and principles of rural sociology to an understanding of rural situation. Importance of rural communities and institution, social stratification. Social processes and social changes in the rural areas. Leadership in rural communities role and functions of rural leaders. Development of rural community leaders. The extension agents and the rural community. Communication techniques and strategies of change. Various agricultural extension teaching methods, aids and their use.

10. Introduction to Nutrition

Definition of Nutrition, functions and interrelationships of various nutrients to the body in health and malnutrition. Aspects of metabolism patterns and trends of food consumption in relation to nutritional requirement over the lifespan.

ELECTIVE

1. Textiles and Clothing Consultation

Fitting technique and construction methods as applied to sewing, woven and knitted fabrics; wardrobe planning, fabric selection and construction of garments for personal and family use. Dyes and dyeing of fabrics.

300 LEVEL

SECOND SEMESTER

1. Post-Harvest Physiology and Storage of Food Crops

Principles of handling, preservation and processing various food crops, fruits, vegetables, tubers, roots in tropical environment in relation to maturity, ripeness and senescence including climate, physical and chemical indices and quality in fruit and vegetable crops. Food storage methods in traditional and modern practice, controlled environment for transit and long term storage.

2. Food Preparation and Preservation

Scientific principles of handling and cooking of foods. Measuring techniques, leavening agents, flour mixtures, modern and traditional equipment. Food procurement, food storage, food preservation methods. Practical in food preparation and preservation; appetizers, main meals, snacks, desserts, convenience foods, rechauffe foods flour mixtures and confectionery.

3. Extension Programme in Home Science, Nutrition and Dietetics

Philosophy and principles of Home Science, Nutrition and Dietetics extension in Nigeria information, education and communication strategies in nutrition and dietetics. Need identification process. Types of education in Home Science, Nutrition and Dietetics. Materials and methods. Factors in Home Science, Nutrition and Dietetics programme, planning and implementation; coordination with other agencies and organization. Role of rural women in the urban agriculture and economic development, industrial field experience in medical or industrial establishment.

4. Food Microbiology

General characteristics of microorganisms important to foods, bacteria, molds and yeasts, microbial structure, acculturation nutrition and growth of microbes; principles of food preservation; microbiological examination of food-borne disease outbreak.

5. Food Service System and Administration

Technical operations and management of food services; primary functions, menu planning and evaluation, forecasting, food and labour costs control, schools, catering establishment (small and large) and hospitals, food distribution systems, quantity for production, principles of selecting, purchasing, convenience and sanitation; supervision and management of personnel.

6. Clothing and Textile Design, Pattern Draft and Alteration

Principles and techniques of textiles designing lines, pattern and design; motif, traditional motifs, methods of transferring design onto fabric; block stencil, screen and roller methods. Colour as a means of transferring motif/design onto fabric photo screen printing. More advanced work in pattern drafting. The use of the basic block a device from which variety of styles and design should be used. Construct self-garment (men, women etc) with the development pattern.

7. Child Development Laboratory

Child care practicum, practicing daily routine for baby and material care e.g. bathing, clothing, breast feeding etc. basics of getting up and running child care programmes e.g. nursery school; techniques of meeting the need of pre-school children with stories, music and play activities.

8. Therapeutic Nutrition

9. Dyes and Dyeing

Definition of concepts; health team specialists; diet therapy, purpose of diet therapy, important factors to consider in diet therapy; nutrition in children diseases. Common diseases among children in the locality, causes of the diseases and their cure using diet therapy. Dietary management of acute and chronic disease of the heart, liver diseases; nutrition in surgical conditions.

10. Principles of Agricultural Economics

The nature of economics and economic problems; scope and methods; price theory and functions of the market with particular reference to agriculture. The concept of opportunity cost supply and demand and their application to agricultural problems. Production functions, cost analysis and functions. Concept of elasticity, type of markets, perfect.

ELECTIVE

1. Introduction to Farm Management and Production

Theory of production. Principles of agricultural production and resource use, factor-factor, factor-product and product-product relationship. consumption and resource allocation in Agriculture, Farm costs and revenue theories. Farm budgeting and analysis.

400 LEVEL

FIRST SEMESTER

1. Human and Community Nutrition

Principles of energy balance in man. Dietary intake and nutrition requirements in pregnancy and lactation of infants and children. Adolescent and adult nutrition as it affects learning and mental development. Biochemistry and physiology of malnutrition and starvation factors in the community influencing nutritional status, economic and socio-cultural. Methods of assesment and implementation. Community nutrition programmes and education.

2. Food Preparation II

The application of principles of nutrition and management to planning and preparation of meals for special groups and occasion; developments research and control techniques; quality characteristics of some important traditional Nigerian food ingredients, strategies for improving nutrients value and utilization of the traditional and non-traditional meals.

3. Principles and Techniques of Textiles Design

Theories, method and practices of textiles design. History of textiles materials and techniques; traditional and contemporary textiles, methods of design application and printing with special emphasis on African traditional motifs; advance in textiles.

4. Fundamentals of Food Processing

Food processing plant location; dressing consideration of food processing plants; raw material handling. Basic methods of food processing and preservation. Thermal, low temperature, dehydration, concentration, fermentation and irradiation.

5. Clothing and Construction

Theories and application of advanced techniques in garment construction using diverse fabrics; construction of contour garment; principles of construction of men's wear.

6. Rural Community Development and Change

Characteristics of rural communities, historical development, principles, philosophy and objectives of rural community development; integrated rural development, model rural development as an educational process; rural community institution. Community motivational role of community leaders in extension programmes; extension in relation to other rural improvement agencies of each rural community socialization process; factors affecting change; case studies on rural community development in Nigeria and other countries.

7. Home Management

Definition and goal of Home Management. Basic principles of management; personal and societal values, goals and standards and how they affect management of both human and non-human resources in the home. Decision-making process and management applied to home-keeping. As part of application of management principles and process, a period of 1-2 weeks in management house is required. During the period students are expected to analyze and evaluate management techniques at different family life-cycle stages and socio-economic levels.

8. Research Methods

Research strategies and design. Variables and scale of measurement. Presentation of data, descriptive statistics (average, standard, deviation standard, errors). Sampling and sample size, randomization. Use of related abstracts, books and journals. Project reporting practical session in areas of Home Science and Nutrition.

9. Consumer Education

Definition and principles of consumer education. A analysis of economic forces affecting individuals and families as consumers of goods and services. Creating awareness of the rights and responsibilities of consumers in the market place; developing aids and techniques for making intelligent choices of goods and services. Political, social, economic and legal implementation of consumer decisions and actions.

10. Technical Writing and Presentation

Introduction to report writing and presentation General survey and information retrieval. Analysis of data and discussion of significant findings, including summary. Emphasis should be placed on professional report writing.

ELECTIVE

1. Housing and Family

2. Food Packaging

Functions of packing. Types and characteristics of packaging materials, testing for structural quality and performance. Packing requirement for fresh and processed foods for local and foreign markets.

400 LEVEL

SECOND SEMESTER

1. Home Management Practicum

As part of application of management principles and processes 1-2 weeks practical attachment in a home (Flat) is required. Concept, objectives of the learning experience. During this period, student is expected to serve in a home where he/she will observe, evaluate and analyze management activities and techniques at different stages and socio-economic levels at the family life-cycle; assessment will be by staff. Student is expected to embark on a simple educative project during this period. All activities must show plan or work or calendar of work.

2. Recipe Development and Evaluation

Definition and types of recipe. Nutritional status and recipe development. Functions of recipe development; needs for new recipes. Fundamental principles of food quality evaluation; acceptability trials, selection of panelists (participants); analysis of results. Factors contributing to acceptability of recipe. Development of recipes from local available foods modification of recipes. Subjects and objective methods of recipes evaluation. Recipe development for industries.

3. Family Life Education and Family Planning

Theories, concepts and principles of family communication. Interaction of decision making conflict resolution. Integration and networking system in the family and community, interrelationships of these to the wider society. Emphasis on the responsible and productive members of society. Principles of responsible sex behaviour, parenthood, family and civic responsibilities and family policies. Principles and concept of family planning and birth control and population education. Modern and traditional techniques; family planning resources and availability, national population policies and education in developing countries emphasis on Nigeria.

4. Seminar

Students will choose special topics in Home Science and Nutrition and will be given as seminar or could be taught as special topics. Presentation and written report will be assessed. Discussion on current states of professionalism and place of research in Home Science and Nutrition, contemporary problems facing families as a result of the rapid socio-economic changes in society.

5. Colour Chemistry and Technology II

The Chemistry and Theory of dyeing application of reactive dyes, preparation and dyeing of man made fibers, dyeing machines; classification of dyes based on chemical structure and methods of application azo dyes, monad dyes, vat dyes and pigments. Relationship between structure and dyeing, properties. Principles of dyeing processes.

6. Project

Under the supervision of staff, students will choose topics and carry out simple research work in selected problem areas of interest, write and present a report in a prescribed format. This is reviewed and assessed by internal and external examiners. The project will be for two semesters of 400 level (final year). Students will be subjected to both seminar and oral presentation of the topic. Students must submit four (4) copies of bind project to the Department after oral project defense with external examiner (one copy each to: Supervision, department, University Library and the student).

7. Administration and Programme Planning in Extension

Concepts, theories, principles and guidelines of administration, organization, supervision applied to extension administrative functions and responsibility of Home Science and Nutrition and Agriculture extension, staff recruited, selection placement and supervision, budget development and fiscal control, importance of programme planning in extension, educative objectives, learning experience, plan of work, calendar of work. The role of good public relations, good leadership and cooperation for an extension worker. Associations and cooperatives.

8. International Nutrition and Food Policy

Global Dynamics of population and food supply and demand problems and solutions. Role of International Relief Organizations in averting World hunger, (UN agencies). Global environment and nutrition. International nutrition policy and programmes, political dimensions and international economy of food security concepts and implementations. Programmes for coping with wars, famine etc by nations and households. The formulation of food and nutrition policy. Government and non-governmental organization bilateral and multilateral cooperation; meeting the worlds summit nutrition goals.

All students are expected to go on a six months SIWES Programme immediately after their Second Semester Examinations at 400 level. They shall be expected to submit a bond copy of their SIWES report to the Department for vetting and grading before graduation. Students are to note that SIWES Schemes taken as a core course.