AGRICULTURAL SCIENCE
NCE COURSE OUTLINE

Course Code: **VTE 110**
Course Title: **Introduction to Vocational and Technical Education**

Credit: **1C**
Course Outline:
Definition: Scope, philosophy and objectives of Vocational and Technical Education, Development of Vocational and Technical Education in Nigeria. The role of Vocational and Technical Education in national development.
Characteristics of Vocational and Technical Education.
Funding of Vocational and Technical Education in Nigeria. Place of Vocational and Technical education in the UBE Scheme.
Vocational Associations, Organizations and organs.
Problems and Prospects of Vocational and Technical Education in Nigeria.

Course Code: **AGE 111**
Course Title: **Introduction to Agriculture**
Credit: **1C**
Course Outline
Meaning and scope of Agriculture, importance of Agriculture in the Nigerian economy, General concepts and terms used in soils, crop production, extension, economics, methodology etc. Brief history of Agricultural Development in Nigeria and the World. Types of farming, world farming systems. Systems of land ownership. Agriculture and the natural environment with emphasis on such phenomena as desert encroachment, soil erosion, etc. Problems of Agricultural development in Nigeria. Role of Government in agricultural development in Nigeria. Agriculture as industry utilizing science and technology. Some basic farm tools and their uses. Principles and practice of nomadic agriculture-characteristics of migrant fishermen and nomads. Forms of Agriculture crop farming. Horticulture, livestock farming, Apiculture, Bee keeping, Fishing and Snail keeping. Employment in agriculture. Description of Forest and Forest uses.

Course Code: **AGE 112**
Course Title: **Agricultural Biology**
Credit: **2C**
Course Outline

Definition of Agricultural Biology
Basic Agricultural Biology Concepts
Importance of Agricultural Biology
Basic relationships between plants and animals
Cell structure and functions
Cell division (mitosis & meiosis) as basis for continuity of life
Classification of plants and animals.

Botanical names of commonly found species of plants and animals in the locality.
Identification of plant and animal species of Agricultural importance.
Anatomy and physiology of crops and animals
Osmosis, diffusion and plasmolysis
Transportation and translocation in plants
Photosynthesis: definition, factors influencing agricultural
Importance and strategies for enhancing photosynthesis
Fruits and seed dispersal
Germinating process and conditions
Photoperiodism and its impact on growth and development of plants
Environment and food chains: population and ecosystem in relation to growth and development of crops.
Aquarium- definition, principles and importance
Preparation of insect box and herbarium based on common insect species and weeds in the locality.

Course Code: **AGE 113**
Course Title: **Agricultural Mathematics**
Credit: **1C**
Course Outline
Units of measurements, calculation of areas and volumes. Arithmetic and geometric progressions. Simple simultaneous and quadratic equations. Elementary trigonometry and co-ordinate geometry. Graphs and their mathematical applications in agriculture e.g plant population and yield studies.

Course Code: **AGE 114**
Course Title: **Agricultural Physics**
Credit: **1C**
Course Outline
Properties of matter. A broad and elementary treatment of motion and force. Friction, machines, levers, adhesion, cohesion, viscosity, surface tension, elasticity. Energy and conservation laws. General principles of heat, light, electricity and magnetism.

Course Code: **AGE 115**
Course Title: **Introduction to Agro-Climatology**
Credit: **2C**
Course Outline
Meaning and scope of agro-climatology. General principles of agro-climatology and equipment used in study. Climatic factors (temperature, precipitation, relative humidity, wind, solar radiations, cloud cover, etc) and how they affect agriculture production. Ecological zones of Nigeria and their effect on ecological distribution of crops, livestock and soil formation. Principles underlining weather forecasting.

Course Code: **AGE 116**
Course Title: **Agricultural Chemistry**
Credit: **2C**
Course Outline

The nature of matter – elements, mixtures and compounds
Basic treatment of atomic, molecular and ionic theories
Conditions affecting chemical change such as equilibrium, catalysis,
enzyme action, water an dits uses, air and its uses etc. general
properties of elements in relation to the periodic table. Types of chemical bonds, octet rules. Characteristics and significant reactions of metal and non-metals. Acid bases and salts introduction to the rules of IUPAC nomenclature of organic compounds. Treatment of hydrocarbons lipids proteins, enzymes, co-enzymes and hormones.

Course Code: **AGE 117**
Course Title: **Practical Agriculture (1)**
Credit: **1C**
Course Outline

Maintenance of individual/group farm plots
Identification of simple farm tools, their uses, care and maintenance.
Keeping of simple records and diaries. Land preparation in nursery
Practices. Care of plants before and after transplanting e.g. watering,
weeding, mulching, etc.

Course Code: **AGE 118**
Course Title: **Introduction to Crop Production**
Credit: **2C**
Course Outline

Meaning of crops and aims of crop production. Measures of quantity and quality of crop produce and products. Genetic and environmental factors affecting crop production (including seed quality, seed rate, plant population, soil quality, climatic and agronomic factors, weeds, pests and diseases). Cropping seasons as they affect production. Agronomic classification of crops and uses. Methods of crop propagation. Meaning and types of pasture. Importance and methods of pasture managements.

Course Code: **AGE 119**
Course Title: **Introduction to Rural Sociology & Extension**
Credit: **2C**
Course Outline

Definition of Rural Sociology
Sociology as a social science
Social organizations and social Institutions
Social action processes and their nature,
Characteristics of rural organizations
Values and norms
Rural Urban Differentials
Definition and objectives of Agricultural Extension
Duties and qualities of extension work communication and diffusion processes in Agriculture
Extension Administration in Nigeria

Principles of Agricultural Extension and functions of Agricultural Extension.
Adoption process of a new technology in Agricultural

NCE II

Course Code: **AGE 210**
Course Title: **Practical Agriculture II**
Credit: **1C**
Course Outline

Maintenance of individual/group farm plots
Identification of simple farm tools, their uses, care and maintenance.
Keeping of simple records and diaries. Land preparation in nursery
Practices. Care of plants before and after transplanting e.g. watering, weeding, mulching, etc.

Course Code: **AGE 211**
Course Title: **Tree Crop Production**
Credit: **1C**
Course Outline

Meaning and importance of tree crop production
Botany, culture, harvesting, processing and storage, marketing and utilization of major tropical tree crops such as: Cocoa, oil palm, cashew, coffee, kola, shea-butter, rubber, mango, citrus, coconut, gum Arabic, neem tree and date palm. Problems and prospects of tree crop production in Nigeria. Definition of crop.

Course Code: **AGE 212**
Course Title: **Poultry Production**
Credit:

Poultry production (meaning, scope, and purpose)
Systems of poultry keeping Brooding and rearing of chicks, management of broilers and growers, management of layers and breeders. Handling, care, grading and candling, incubators and incubation process. Feeds and feeding. Hatchery management. Record keeping in poultry.

Course Code: **AGE 213**
Course Title: **Introduction Genetics**
Credit
Course Outline:

Genetics (meaning, scope and application)
Genetics principles
Early conceptions about heredity (Pre-Mendelian genetic theories)
Mendelian Genetics
Chromosomes
Sex Inheritance
Genetic Variability and heritability
Basic definition of population genetics. Basic concepts in genetic engineering, mutation and eugenics.

Course Code: **AGE 214**
Course Title: **Principles of Agricultural Economics**
Credit: **1C**
Course Outline:

Meaning and scope of agricultural economics. Demand and supply for agricultural goods and services. Production functions and the law of diminishing returns in agricultural production e.g eggs, yams and vegetables etc.

Cost analysis and their implications in agricultural production.

Course Code: **AGE 215**
Course Title: **Farm Power and Machinery**
Credit:
Course Outline:
Meaning and definition of farm power. Types and sources of farm power. Unit of measurements of force, work, energy and power. Measurement of engine power on the farm and their uses. Brief description of an internal combustion engine. Objectives of agricultural engineering. Scope of agricultural engineering. Improvement of farm mechanization. Maintenance of farm tools. Implements and machineries. Brief description and functions of tillage, cultivating, planting, fertilizing, processing and storage equipment. The tractor services and maintenance. Description and uses of PTO (Power-take-off-shaft). Uses and maintenance of the following farm implements.
-mould board and disc plough, harrows, ridgers inter-row cultivators, seeders, artificial fertilizer spreaders, broadcasters and spot placers. The action of each implement when in use in the field (operation) e.g. correct setting of implement.

Course Code: **AGE 216**
Course Title: **Curriculum Development in Agriculture**
Credit: **1C**
Course Outline:
Definition of curriculum. Types of curriculum. Curriculum process and evaluation of agricultural education. Drills in curriculum design in agriculture. Critique of the curriculum for primary and secondary school agriculture.

Course Code: **AGE 217**
Course Title: **Fish Production**
Credit: **1C**
Course Outline:
Meaning of fish and fishery. Types of fish/breeds, importance of fish, and fish products in National economy. Methods of fish farming-open water e.g. River and lakes, high sea fishing and fish ponds. Fish ponds construction, stocking, management, fish breeding, harvesting, preservation and marketing of fishes. Fishing equipments, functions and maintenance, fish feeds and feeding (materials required for fish feeds).

Course Code: **AGE 218**
Course Title: **Animal Nutrition**
Credit: **1C**
Course Outline:
Meaning and scope of animal nutrition; water, carbohydrates, proteins, fats and oils-their functions within the animal body. Study of vitamins, minerals, enzymes, hormones, and coenzymes. The use of antibiotics, synthetic hormones and food additives. Feedstuff-their analysis and nutritive contents. Nutritional requirement of farm animals and their measurements. Types of ration and ration formulation.

Course Code: **AGE 219**
Course Title: **Entrepreneurship In Vocational & Technical Education**
Credit: **1C**
Course Outline:

Concept of entrepreneurship. Types of Entrepreneurs. Entrepreneurial theory-venture growth, opportunity recognition and exploitation. Types of Risks and their management. Condition for establishing a business. Forms of business ownership. Business and Technology-issues and problems. Financing business-new and old, including innovative techniques. Business finance and funding institutions site selection and location of a business. Business environment. Management and administration of small and medium business. The future of business and succession issues-case study. Pilot study and feasibility report. Elements of marketing and market segmentation. Product development; Business and social responsibility- Government regulations/taxation. Auditing. Consumer behaviour society. Share-holders etc. management functions. Human resource management and communications Record keeping/book-keeping.

NCE III

Course Code: **AGE 324**
Course Title: **Teaching Practice**
Credit: **6C**
Course Outline:

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